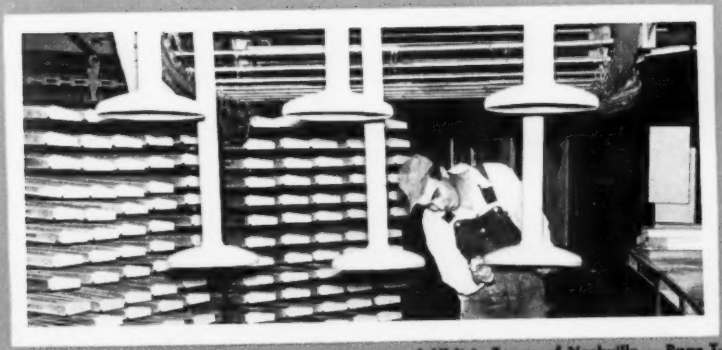
AUGUST • 1959

MPM Metal Products Manufacturing

Serving the Appliance and Fabricated Metal Products Industry

Continuous Line for Vinyl on Metal — Page 40

Home Laundry Queen for '59 — Page 30



A Visit to Tomco of Nashville — Page T-1

At Dictaphone Corporation:

▲Even though each successive coating is cured in this batch oven, Epon resin coatings resist yellowing or clouding. Formulator: I-Sis Chemicals, Inc., Springdale, Connecticut.

The Dictet recorder, made by Dictaphone Corporation, Bridgeport, Connecticut, is protected from perspiration, acids, and abrasion by tough Epon resin-based coatings. ▶

With Epon® resin-based coatings, Dictet recorders keep their "factory-fresh" look for years

Dictaphone's Dictet recorders are world-famed for their mechanical dependability. But exterior finishes sometimes failed to resist perspiration acids, abrasion, and impact.

Dictaphone turned to Epon resin-based formulations for their answer . . .

A three-coating system based on Epon resins—primer, aluminum, and clear—was thoroughly checked before being placed on the production line. Result: the clear, marble-like coatings had exceptional hardness which seemed to increase with aging . . . "the closest we can come to a nickel or chrome plating," reported paint technicians.

Have you a coating problem? An Epon resin-based formulation may be *your* answer, too. Its outstanding abrasion and chemical resistance make it an ideal all-purpose industrial coating.

Call on Shell Chemical sales offices for names of suppliers. And write for the full Epon resin coatings story, "Planning to Paint a Pyramid?" SHELL CHEMICAL CORPORATION, 50 West 50th Street, New York 20, New York.

SHELL CHEMICAL CORPORATION
PLASTICS AND RESINS DIVISION

Central District
6054 West Touhy Avenue
Chicago 48, Illinois

East Central District
1578 Union Commerce Bldg.
Cleveland 14, Ohio

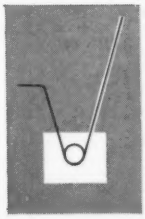
Eastern District
50 West 50th Street
New York 20, New York

Western District
10642 Downey Avenue
Downey, California

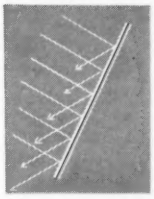
IN CANADA: Chemical Division, Shell Oil Company of Canada, Limited, Toronto

SHELL

ARMCO
ALUMINIZED STEEL
TYPE 1

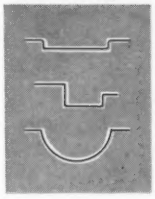


Sturdy steel coated with aluminum by a patented hot-dip process. No metal of comparable price can match ALUMINIZED STEEL Type 1 in resistance to destructive combinations of heat and corrosion.



The surface of this aluminum-coated steel reflects up to 80 per cent of radiant heat. It's used to "save" heat (hold it in) or to direct heat where it's wanted.

ALUMINIZED STEEL will withstand moderate forming, drawing or spinning operations without flaking or peeling



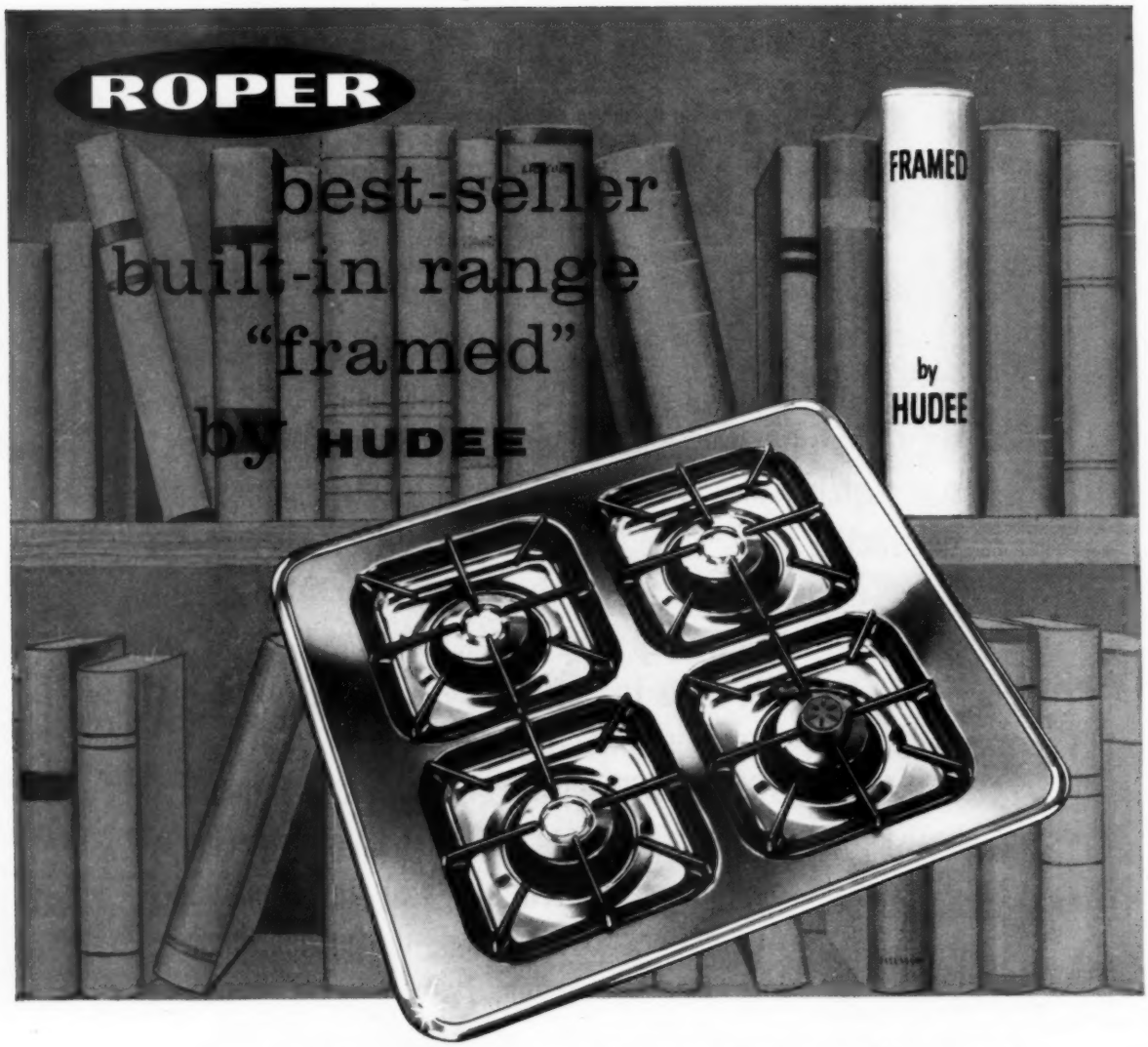
of the coating. Costs stay low because ALUMINIZED STEEL needs no further finishing after fabrication. Twenty years' experience by hundreds of manufacturers shows that products and parts made of ALUMINIZED STEEL mean service savings too—through longer life, more efficient operation.

For information about this aluminum-coated steel originated by Armco, write: Armco Steel Corporation, 2469 Curtis Street, Middletown, Ohio.

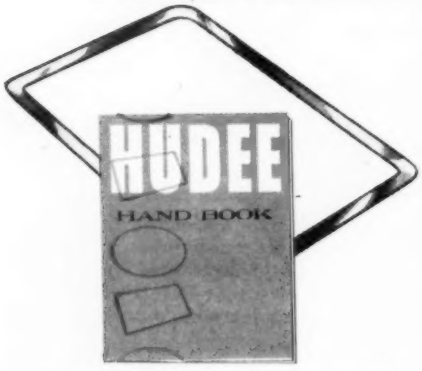
New steels are born at Armco

ARMCO STEEL

Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products



. . . because Hudee Frames the best of appliances!



You'll find it's true everywhere . . . leading manufacturers specify Hudee frames for their products. The leader in the field, Hudee rates first in performance, economy, appearance, satisfaction.

In addition to special frames, Hudee makes aluminum or stainless steel frames for each of 1,062 different sinks, lavatories, gas and electric ranges, drinking fountains, etc. . . . or for any custom need! Hudee has the patented interlocking lug that doubles as a fixture hanger making every installation a fast, simple, one-man operation. Remember, a Hudee frame always seals snug and flush for the tightest, cleanest installation—and your customer knows how to install Hudee, appreciates its plus value.

Hudee's expert engineers will gladly work with you from the initial design to the completed installation of any fixture-framing problem. Call Hudee for complete, qualified engineering service.

Hudee helps you sell!

Send today for your free Hudee Handbook—the only booklet of its kind—presenting 50 reference tables showing which frame to order for each of the 1,062 sinks and lavatories in the industry plus other pertinent information.

SELCK

WALTER E. SELCK and CO.
225 West Hubbard Street, Chicago 10, Ill.

Hudee Frames are covered by patents 2,440,741 and 2,704,370.

MPM

(including finish)

MONTHLY TRADE PUBLICATION

Established January 1944

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NBP BPA

AUGUST • 1959

VOL. 16 • NO. 8

FEATURES

SHORT FEATURES

DEPARTMENTS

METAL PRODUCTS MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT

A **trade publication** devoted to the interests of the metal products manufacturing industry with special editorial attention to home appliances. The editorial scope covers design, engineering, market and statistical information and technical and practical information on plant facilities and all phases of manufacturing "from raw metal to finished product." Free controlled circulation to top management, purchasing, engineering and key plant management and supervision in metal product manufacturing plants. To others, subscription price is $8.00 per year, domestic. To all other countries $10.00 per year (U.S. funds). Single copies, $1.00.

Accepted under the act of June 5, 1934 at Aurora, Illinois authorized January 7, 1948.

SHEARING. In the fabrication of flat sheet metal, irregular shearing is frequently a very important operation. Republic Stainless Steel, because of its controlled qualities, responds to most types of machines designed for this operation.

These pictures tell the story!

REPUBLIC STEEL SHEETS TAKE MANY FABRICATING OPERATIONS —MEET MANY PRODUCT REQUIREMENTS

Photographs on these pages show how the Bastian-Blessing Company, Chicago, Illinois, uses Republic Steel Sheets in producing a line of high-quality refrigerated soda fountain and food service equipment. These units are installed in restaurants, drug stores, and other places where maximum cold protection, cleanability, and sanitary appearance are of utmost importance.

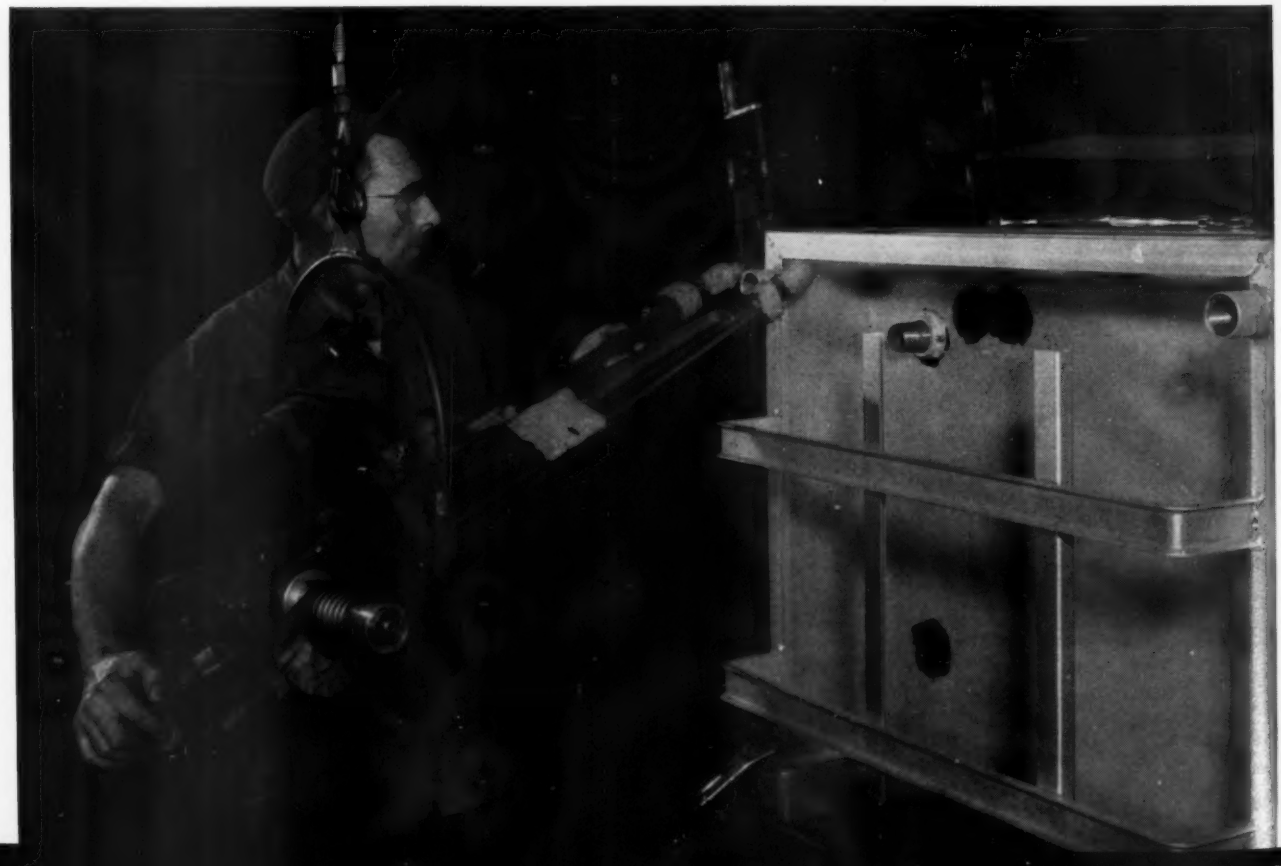
REPUBLIC ENDURO® STAINLESS STEEL SHEETS are used for exterior parts of these units. Results are maximum resistance to corrosion, exceptional ease of cleaning and a gleaming beauty that enhances the appearance of any food dispensing installation.

REPUBLIC GALVANNEALED SHEETS are used for backs, liners, and other concealed parts such as dividing walls. These parts are usually painted gray. Bastian-Blessing finds that Republic Galvannealed resists corrosion even if painted surface should be scratched or marred.

Use of Republic Stainless Steel and Galvannealed Sheets is in line with Bastian-Blessing's policy of building the finest quality into every part of their products.

The versatility and high quality of Republic Steel Sheets, along with the ease with which they can be fabricated, make them ideal for a wide range of other manufacturing applications, too. For further information, contact your Republic representative, or mail coupon today.

SPOT WELDING. Heavy gage Republic Galvannealed, after being formed, is spot welded to form the main frame of this soda fountain unit. Though out of sight from the public, Republic Galvannealed serves a vital function because of its high resistance to corrosion.



FINISHED UNIT. After taking a diversity of fabricating operations, this semi-finished Bastian-Blessing unit is almost ready for test and shipment. A final step is light buffing to bring out the satin-like surface of the Republic Stainless Steel exterior. In the completed product, eye appeal, sanitation, and ease of cleaning are all derived from use of Republic Stainless Steel Sheets.

BRAKE FORMING. Severe 90-degree bends do not affect the corrosion-resistance or paint-adherence qualities of Republic Galvannealed Sheets.

SOLDERING. With the proper flux, Republic Stainless Steel can be soldered rapidly and easily, providing a smooth, tight bond and seal.

REPUBLIC STEEL

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. MG-8137
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Please send more information on:
☐ Stainless Steel Sheets ☐ Galvannealed Sheets

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

Handling and storage system

Gentlemen: In the June, 1959 issue of METAL PRODUCTS MANUFACTURING you have an article on Page 97 entitled. "Pushbutton storage system provides high selectivity."

In the article, the Triax Equipment Co. is credited with designing and furnishing a handling and storage system.

Please give me the address of the Triax Equipment Co., and oblige.

E. O. Sporleder, Administrative Assistant
Century Electric Co.
St. Louis, Mo.

Triax Equipment Co. is located at 3921 Mayfield Rd., Cleveland 21, Ohio.

The Editors

Safety device for refrigerators

Gentlemen: Please send us your May issue on Automatic Merchandising and also the address of the B. F. Goodrich Industrial Products Co. that manufactures flexible magnets for refrigerator doors.

Fred M. Gore, Industrial Designer
Fred M. Gore Industrial Design
Dallas, Texas

The May issue of MPM has been sent to Mr. Gore, and the address of the B. F. Goodrich Industrial Products, B. F. Goodrich Co., is 500 S. Main St., Akron, Ohio.

The Editors

The engineering of appliances

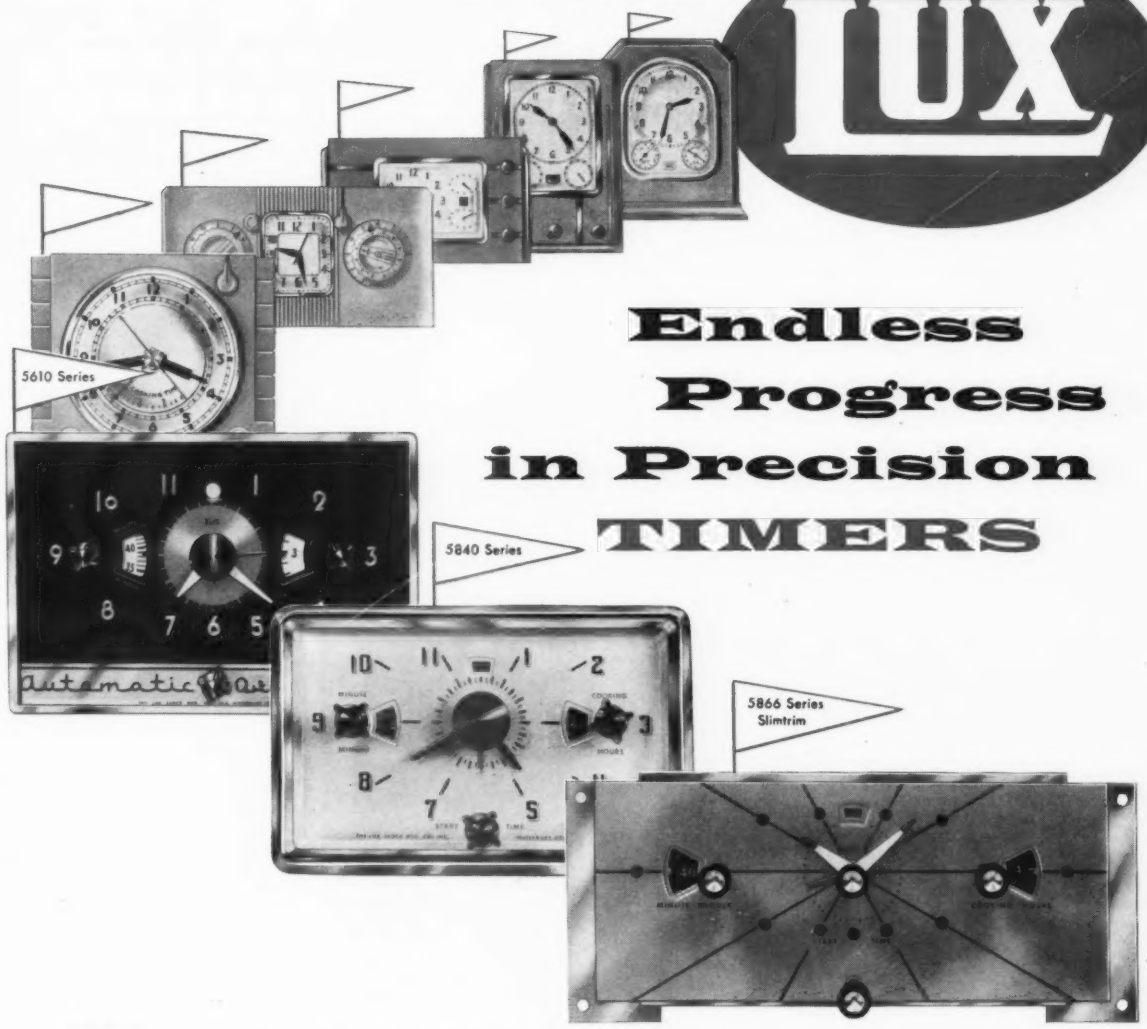
Gentlemen: I have read the special article in MPM, June issue, on thermostats and appliance design. As a general article, it is very straightforward, and covers the subject in easy readable language.

I would like to suggest that there are many more areas of energy control which could be similarly covered, and would be of wide general interest. It is my opinion that the appliance industry grew up largely from brilliant mechanical tinkering in model shops which could give physical embodiment with metals. However, the day has come when appliances must be engineered, and Webster says, "An engineer is one who devises and schemes to use the materials and energy of nature for the benefit of man." Most appliances take both materials and energy. The use of energy means intelligent conversion and control to make the appliance useful. Therefore, with the appliance industry

to Page 20 →

From LUX

Endless Progress in Precision TIMERS



From their first timer down through the latest *slimtrim* model in the 5800 series, each Lux timer has been a keen instrument, with accuracy and reliability guaranteed by the life-testing pattern through which a prototype of each model must pass.

The history of Lux—specialists in the timer field and producers of more than 20 million clocks and timers—has been to combine engineered construction with imaginative styling for continuing customer satisfaction.

Always perceptive and thorough, Lux management today has infused into the company's several departments of design, development, and sales the energy and serious purpose to meet the appliance industry's constant demand for timers of improved design and performance.

Better components mean better washers, dryers, ranges. Whatever your product, if it needs a timer, look to Lux . . . first in fashion . . . infallible in function.

LUX Time
YOUR TIME-REMINDER LINE

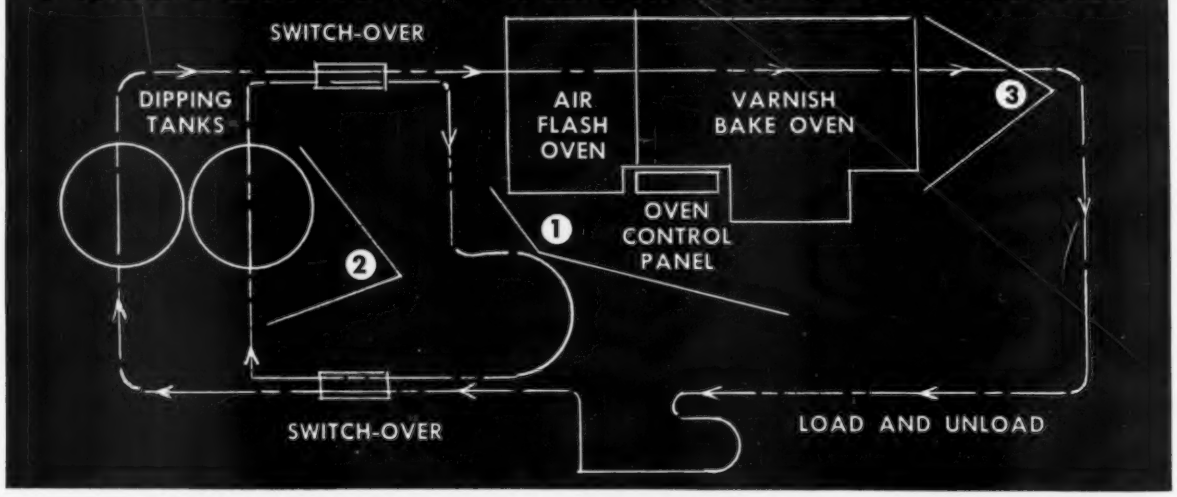
LUX . . . first . . . for lasting TIME

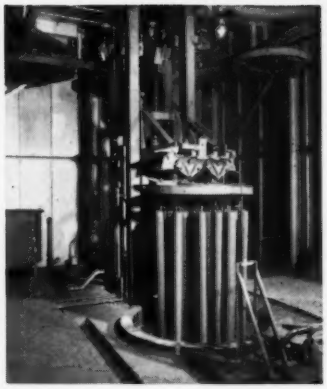
THE LUX CLOCK MANUFACTURING COMPANY, INC.

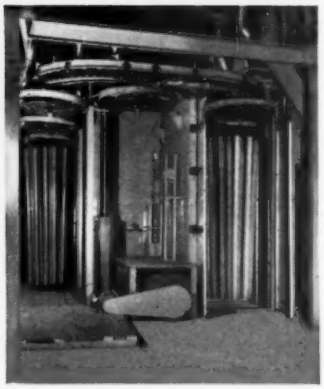
WATERBURY 20, CONNECTICUT

INTEGRATED

FINISHING SYSTEM DESIGNED FOR TODAY'S PRODUCTION . . . TOMORROW'S POTENTIAL







WALKER BROS. has Doubled Production with this MOCO SYSTEM

Custom-engineered for Walker Brothers of Conshohocken, Pa., manufacturers of quality electrical distribution materials, this Michigan Oven Finishing System is *integrated* for increased product quality, lower operating cost and greater safety. All with higher production volume.

The MOCO ovens shown above feature design simplicity, hazard proof construction, with numerous safety features. Designed to speed the application of an acid and alkali resistant enamel coating over the zinc coated steel electrical conduit, the MOCO installation has doubled former production, even though it is presently operating at only 50% of its rated capacity.

Alternate dipping system uses two tanks, each with separately-controlled, variable rate of immersion, withdrawal, and dwell time. Conveyor layout permits the use of either or both tanks at any time. MOCO Integrated Finishing System includes tank, filters and pumps, as well as complete heating and temperature control equipment for the enamel coating.

Enameled conduit, 10 ft. long and up to 6 inches in diameter, pass through 105° Air Flash Oven, then through the 450° Bake Oven. Overlapping exit doors (above) help maintain even temperature within the Bake Oven. Conveyor holds up to a ton of conduit on each rack, moves 6′0″ every six minutes; conduit passes through both ovens in 24 minutes. Except for loading and unloading of racks, entire operation is automatic.

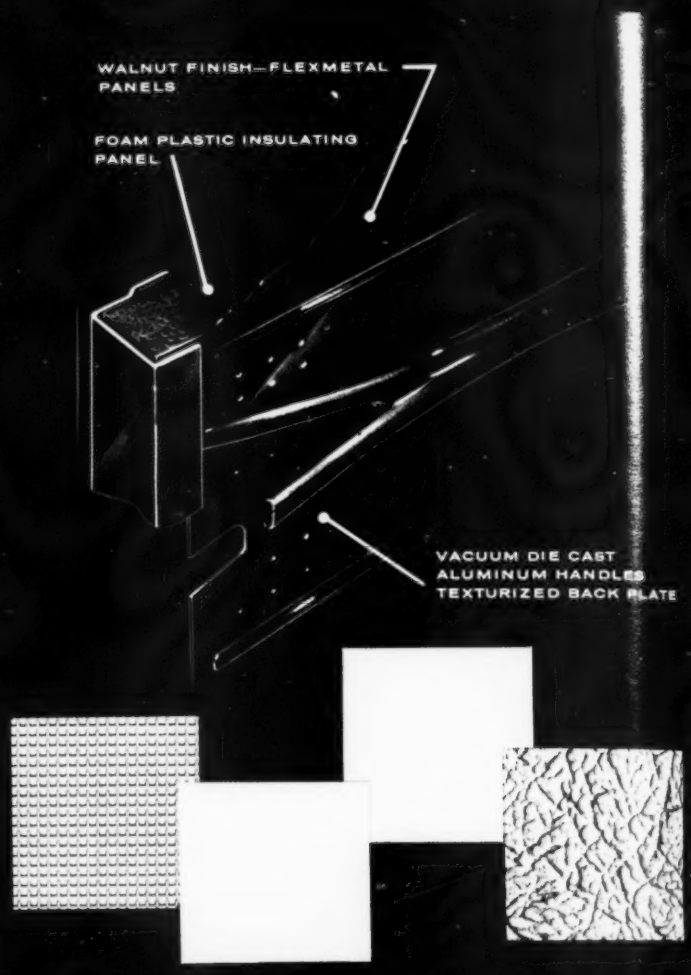
FREE—Send for your MOCO bulletin showing typical finishing system applications and specifications, or write for the name of the MOCO Representative nearest you.

MICHIGAN OVEN COMPANY

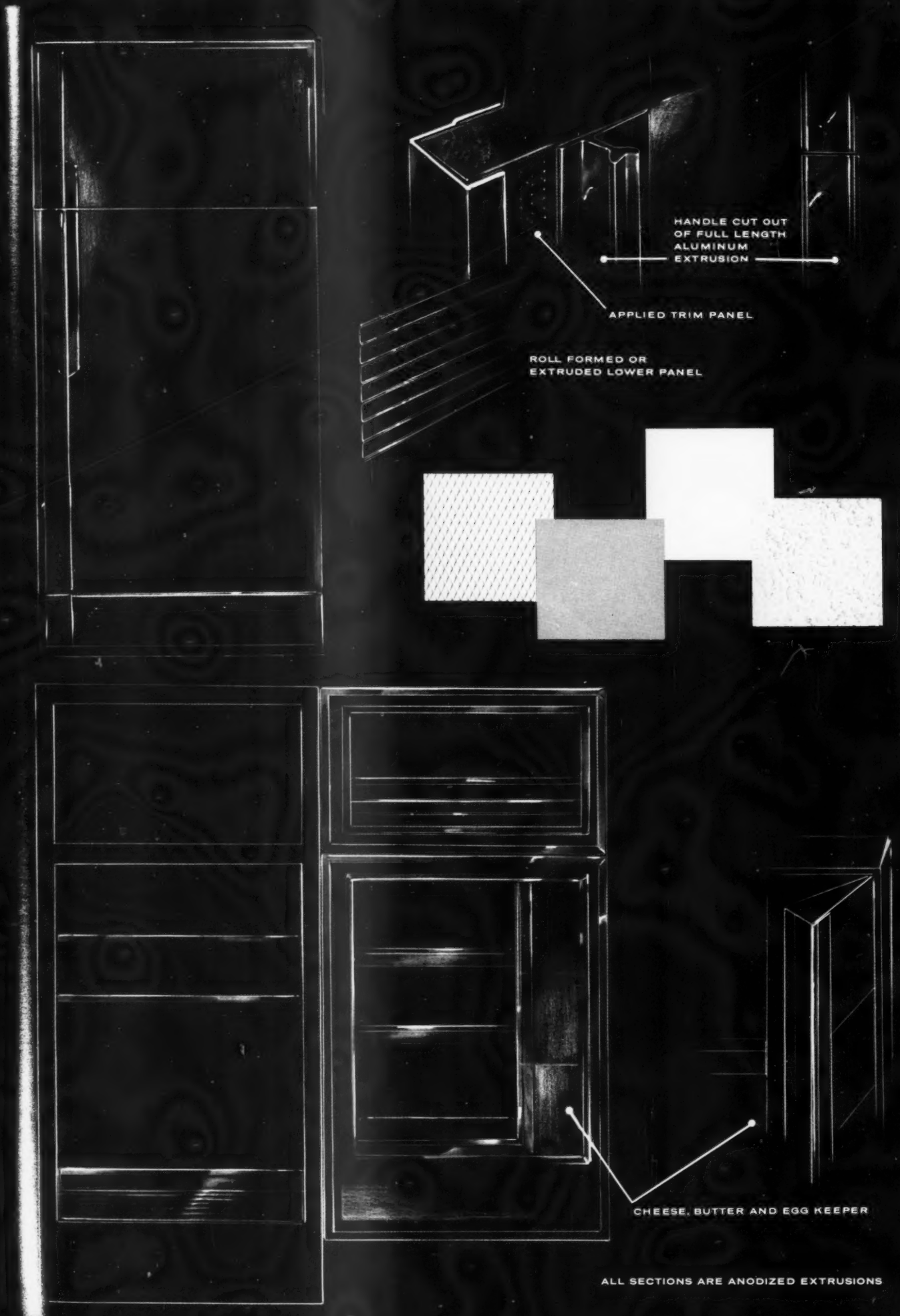
MOCO

FINISHING EQUIPMENT DEPARTMENT
411 BRAINARD, DETROIT 1, MICHIGAN

Washing Machines • Bonderizing Units • Dry-off Ovens • Dip Tanks
• Spray Booths • Flo-coaters • Finishing Ovens • Conveyors



VIEW OF INSIDE CORNER—FORMED PANEL "X" APPLIED TO TOP AND BOTTOM SEALING CORNERS



ALL SECTIONS ARE ANODIZED EXTRUSIONS

How aluminum offers refrigerator manufacturers

FLEXIBILITY and ECONOMY

in Styling, Fabricating and Finishing

The sketches on the preceding pages by Reynolds Styling and Design Department suggest a few of the many new ways that strong, lightweight, rustfree aluminum can contribute to refrigerator and freezer design. These sketches are also intended as a springboard for your imagination. There are almost unlimited combinations of design possibilities with aluminum, because aluminum is the most versatile of all metals. Styling, fabricating and finishing techniques can be varied in every refrigerator part—in both conventional and built-in models. Here are a few examples.

In *fabrication*, aluminum can be drawn, extruded, cast, stamped, roll formed, expanded, perforated or pierced. A wide choice of *attachment* methods is also available: welding, mechanical fasteners, tabs and cast pegs, bolts and rivets, metal stitching and epoxy resin adhesives are among the most common. In *finishing*, a wide variety of sales appealing colors can be easily obtained through painting and color anodizing. A variety of surface textures is also available.

This versatility also points the way to *manufacturing economies*. For instance, modern techniques in design, tooling and assembly permit higher rates of production with aluminum at low cost. Aluminum extrusions, with their nominal die costs, are a good example. Aluminum's light weight cuts costs of certain reinforcing or supporting parts. Lightweight aluminum also lowers handling and shipping costs.

Economies in finishing are also worth investigating. One-Side-Bright aluminum can be used to eliminate costly buffing operations. Pre-painted aluminum sheet (Reynolds Colorweld Aluminum Coil) is ideal for applications calling for a painted stock. Colorweld Aluminum Coil can be formed and fabricated.

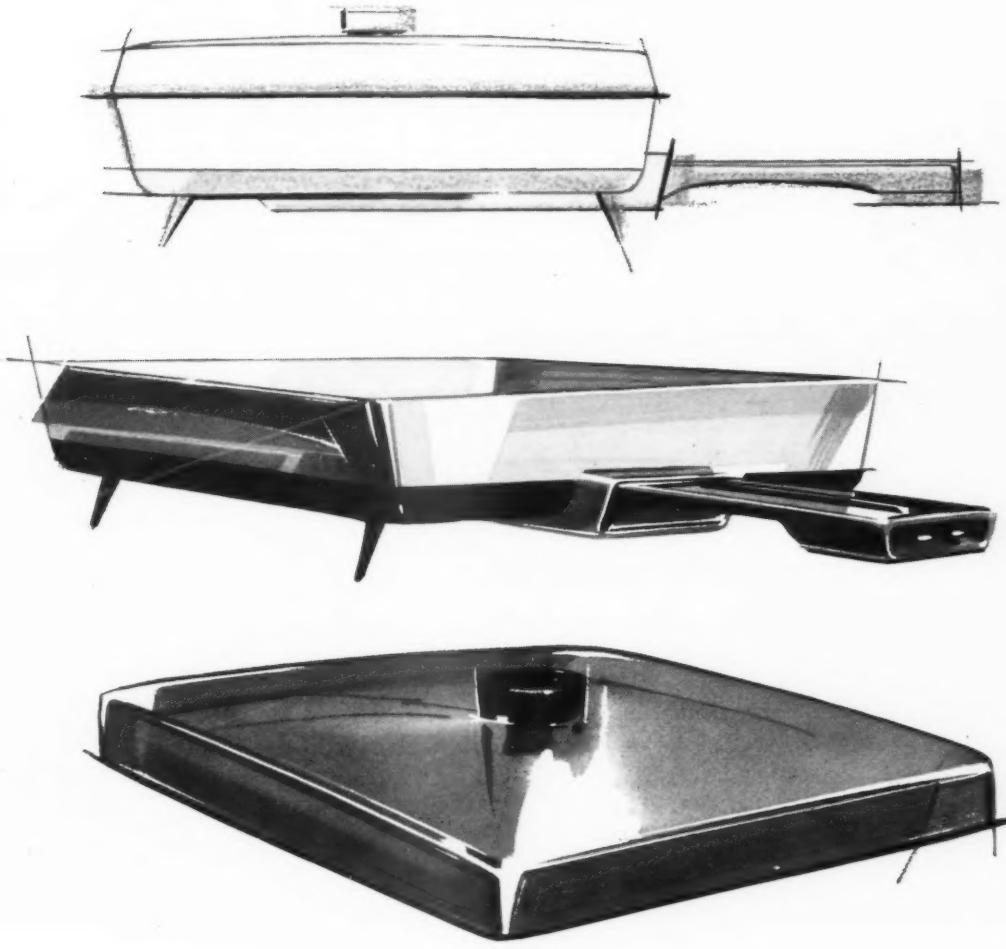
Embossed or brush finished aluminum sheet, in standard or special designs, require no additional finishing operations—permit low cost styling "change-overs". Laminates of aluminum with vinyl plastics or wood cut costs and weight in sandwich panel and other decorative or functional part construction.

New ideas for using aluminum in refrigerators and other appliances are being developed constantly. Reynolds Styling and Design and Product Development groups are ready to assist your own stylists and engineers in putting the newest and best aluminum forms, finishes and fabricating techniques to work in your products. Reynolds fabricating facilities are also at your service to assist in actual fabrication of finished aluminum parts. For highest quality aluminum mill products or for details on these services, contact your nearest Reynolds branch office or write *Reynolds Metals Company, P.O. Box 2346AU, Richmond 18, Virginia.*

NOTE: Before you make or buy any appliance part, have it designed and priced in aluminum. Remember—basic material costs do not determine part costs. New techniques and processes—applicable only to aluminum—can often give you a better product at a lower *final* cost.

REYNOLDS ALUMINUM

Watch Reynolds TV Show—**"WALT DISNEY PRESENTS"**—every week on ABC-TV



FIRESTONE ADDS SIZZLE TO YOUR SALES WITH fashionized ALUMINUM PARTS

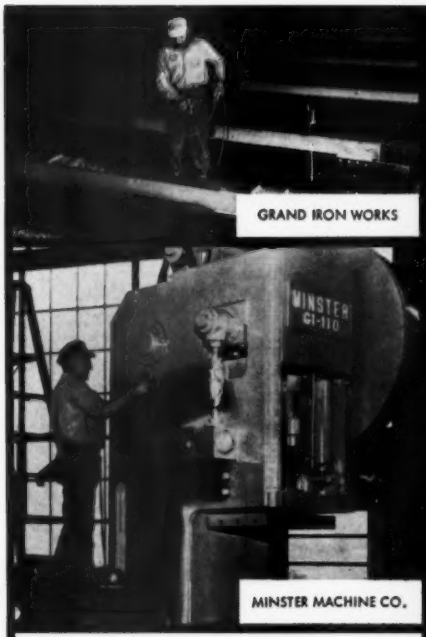
Call on Firestone's fabricating and finishing abilities in mass-produced parts and trim for home appliances.

Call on the brightest brightwork in the business to add a new selling edge to your appliances! Whatever your product—toaster, range or roaster—call on the buy-wise advantages of colorful aluminum parts and trim, formed and *Fashionized*® by Firestone.

Call on Fashionized Aluminum and on Firestone's more than fifty years of metal-forming experience. Call, too, on the production capacities and competitive prices that Firestone's automated anodizing line can give you. Your inquiries and inspections are cordially invited. Write, phone or wire today.

FIRESTONE FASHIONIZED ALUMINUM

FIRESTONE STEEL PRODUCTS COMPANY, AKRON 1, OHIO



GRAND IRON WORKS

MINSTER MACHINE CO.

airless*

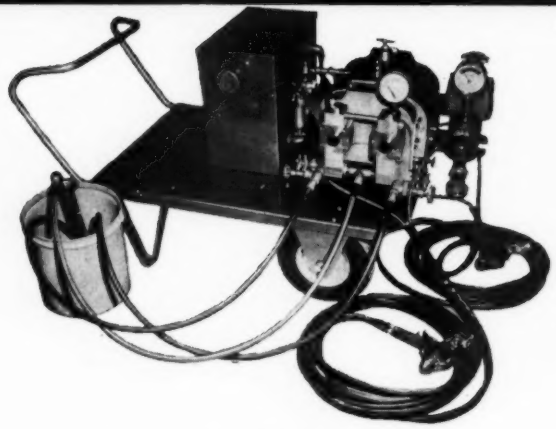
Spray Coating Equipment

Now you can spray it on the spot . . . without expensive spray booths and exhaust systems. Here's a partial list of Nordson Airless Spray Equipment users—

GENERAL CABLE COMPANY	U. S. PIPE & FOUNDRY COMPANY
GISHOLT MACHINE COMPANY	DANA CORPORATION
LONG MANUFACTURING CO.	H.H. ROBERTSON COMPANY
PIPE MACHINERY COMPANY	AMERICAN STEEL FOUNDRIES

GRADALL DIVISION OF WARNER & SWASEY CO.

HANSEL & ELCOCK COMPANY	THE OLIVER CORPORATION
EDWARDS IRON WORKS	TOWER IRON WORKS
SOUTHERN IRON WORKS	THE MARLEY COMPANY
ART IRON & WIRE WORKS, INC.	INDUSTRIAL CRANE & HOIST CO.



*SPRAY PAINTING WITHOUT AIR

CLEVELAND CRANE & ENGINEERING CO.

NIAGARA MACHINE AND TOOL WORKS	YALE & TOWNE MFG. COMPANY
GENERAL ELECTRIC COMPANY	CLEVELAND TRENCHER COMPANY
CLEARING MACHINE CORP.	MIDLAND STRUCTURAL STEEL
DREIS & KRUMP MFG. COMPANY	BETHLEHEM STEEL COMPANY
C. H. WHEELER MFG. COMPANY	FOOTE BURT COMPANY
OSBORN MFG. COMPANY	LUCAS MACH. DIV. OF NEW BRITAIN MACH. CO.
LETOURNEAU - WESTINGHOUSE CORP.	THE V & O PRESS COMPANY
DUQUESNE LIGHT COMPANY	ALLIANCE MACHINE COMPANY
LINK - BELT COMPANY	AMERICAN MONORAIL COMPANY
A. O. WILSON STRUCTURAL CO.	MCKAY MACHINE COMPANY
AMERICAN TOOL WORKS	NATIONAL SUPPLY COMPANY
AMERICAN BRIDGE DIV., U. S. STEEL CORP.	NEW ENGLAND IRON WORKS
OSTER MFG. COMPANY	WEST END IRON WORKS
VIERLING STEEL COMPANY	LEHIGH STRUCTURAL STEEL

NORDSON CORPORATION

AMHERST, OHIO YUKON 8-4473

In Canada: 864 Pape Ave., Toronto, Ontario

THE BEST IN SPRAY COATING EQUIPMENT

WRITE FOR AIRLESS SPRAY COATING BROCHURE

ALL SIGNS POINT TO USE OF LEAD

All these attractive signs are aluminum or aluminized steel, enameled with a lead-bearing porcelain enamel. They're quite an improvement over the signs of 10 years ago . . . more colorful, more weather-resistant, and much lighter in weight. Like many other products in today's living, lead has been instrumental in their development.

Lead lowers an enamel's melting point, allows it to be fused onto aluminum at temperatures low enough so that the aluminum remains stable. Lead makes the enamel flow smoothly and set in a thin acid-resistant, comparatively-elastic surface. It can be cut, sheared or punched after fabrication with little or no spalling or chipping. Lead adds brilliance to a wide range of colors, reflecting in appearance its superior quality.

Why don't you too investigate the cost-saving advantages of lead compounds for your products? More facts are available in an informative booklet called "Lead in the Ceramic Industries." We'll be glad to send it to you without charge. Why not write for it today? 1963

LEAD INDUSTRIES RELY ON LEAD ASSOCIATION

look ahead with LEAD

Lead Industries Association
60 East 42nd Street New York 17, N. Y.

ENAMELS
GLASS
GLAZES
COLORS
BODIES

INDUSTRY MEETINGS

ENAMELERS

Eastern Enamelers Club Outing, Hunsicker's Grove near Allentown, Pa., August 8, 1959.

CHEMISTRY

Physical Chemistry Subject Division Symposium, McMaster University, Hamilton, Ontario, Can., August 30-September 1, 1959.

GAS ASSOCIATION

Pacific Coast Gas Association's Convention, Ambassador Hotel, Los Angeles, Calif., September 9-11, 1959.

DIE CASTING

Annual Meetings of the American Die Casting Institute and the Die Casting Research Foundation, Edgewater Beach Hotel, Chicago, Ill., September 16-17, 1959.

INSTRUMENT SOCIETY

The 14th Annual Conference & Exhibit of the Instrument Society of America, Amphitheatre, Chicago, Ill., September 20-25, 1959.

PORCELAIN ENAMEL

Porcelain Enamel Institute's Annual Meeting, The Greenbrier, White Sulphur Springs, W. Va., September 24-26, 1959.

WELDING

The American Welding Society's Fall Meeting, Sheraton-Cadillac Hotel, Detroit, Mich., September 28-October 1, 1959.

VACUUM TECHNOLOGY

The 6th National Symposium on Vacuum Technology of the American Vacuum Society, Sheraton Hotel, Philadelphia, Pa., October 7-9, 1959.

BUSINESS SHOW

The 51st National Business Show, New York Coliseum, New York City, N. Y., October 19-23, 1959.

AUTOMATIC MERCHANDISING

National Automatic Merchandising Association's Convention-Exhibit, Conrad Hilton Hotel & Navy Pier, Chicago, Ill., October 31-November 3, 1959.

AIR CONDITIONING

The 11th Exposition of the Air Conditioning and Refrigeration Industry, Convention Hall, Atlantic City, N. J., November 2-5, 1959.

METALS

The 41st National Metal Exposition & Congress, International Amphitheatre, Chicago, Ill., November 2-6, 1959.

PEI FORUM

The Porcelain Enamel Institute's Shop Practice Forum, The Ohio State University, Columbus, Ohio, November 4-6, 1959.

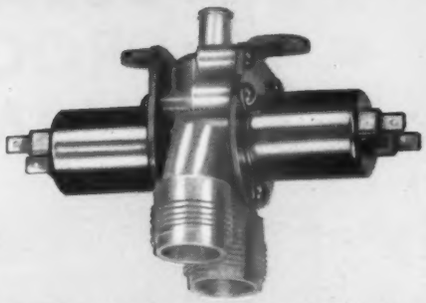
APPLIANCE TECHNICAL CONFERENCE

First Western Appliance Technical Conference, AIEE-Sponsored, Biltmore Hotel, Los Angeles, Calif., November 16, 1959.

Here are FIVE

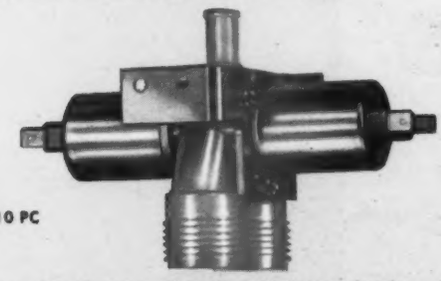
NEW

MEMBERS of the DOLE family of precision control valves



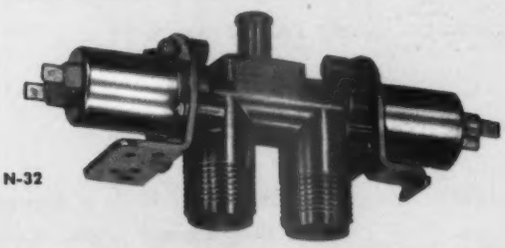
N-10

A new double solenoid non-thermostatic valve with molded integral outlet and incorporating the flow control feature in the outlet. Hot, mixed and cold water is provided.



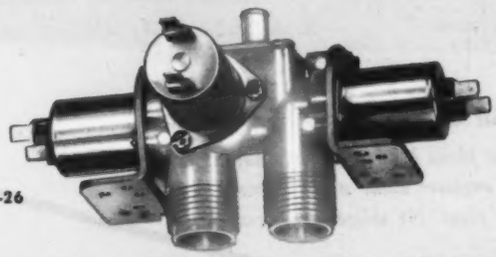
N-10 PC

A two solenoid mixing valve with molded integral outlet and either restrictions or flow controls at each inlet. Provides hot, mixed and cold water. Inlet flow controls give a degree of mixed temperature compensation with varying inlet pressures.



N-32

This non-thermostatic double solenoid mixing valve can be supplied with flow control feature. Provides hot, medium and mixed water.



N-26

A three solenoid non-thermostatic mixing valve, providing control of hot, medium, mixed, cool and cold water. Has flow control feature in outlet and balancing inlet restrictions to compensate for inlet pressure differentials.

N-23

A non-thermostatic mixing valve having a third solenoid for control of cold water to the condenser system of a combination washer-dryer. Condenser water flows from an auxiliary outlet. Water through the main outlet may be hot, mixed or cold. Can also be applied to automatic washers to control water supply and operate a conditioner or detergent dispenser.

ere are just few of e many OLE *firsts*

e first thermostatic mixing ve for automatic clothes shers.

e also produced the first -thermostatic mixing valve the same industry.

e first thermostatic valve ich also provided cold water washing or rinsing.

produced the first valve for denser clothes dryers.

were the first to offer the nomies resulting from the use nolded nylon valve bodies.

first valves with integral noids were produced by Dole.

e designed and sold the t solenoid operated valves combination washer-dryers uding in one package control wash and rinse water and water needed for the denser system.

first solenoid valves for table dishwashers were e products.

e designed the first storage fabric conditioner dispenser.

first single solenoid valve economy model clothes hers was a Dole development.

Back when the first automatic washing machine was still on the drawing board, Dole designed and built the first practical solenoid valve to turn the water on and off . . . to control the rate of flow . . . and to mix the water to the desired temperature.

For more than 50 years the problems of control have been uppermost in the minds of Dole engineers. And year after year they have been first with new improvements . . . new developments . . . new ways of doing the job better.

Today . . . Dole again leads the field with five new solenoid valves. Each one embodies certain basic, proven Dole principles plus important improvements that contribute materially to the smooth, efficient operation of the machine for which they were designed.

This year . . . as every year . . . you can look to Dole for the solution to your control problems . . . and find it. If you want details about any of these new valves, we'll be glad to supply them.

First with the finest for more than fifty years

Control with

DOLE®

THE DOLE VALVE COMPANY

6201 Oakton Street • Morton Grove, Illinois
(Chicago Suburb)

PHOTO BY KARSH OF OTTAWA

"Steel quality is vital to Shu-Lok— Sharon has the quality we want"

—CARL M. JOSLYN, plant manager, Shu-Lok Fastener Division, Talon, Inc.

"The Shu-Lok is a product of precision—yet it must be able to absorb the exceptional punishment of holding active boys' shoes intact indefinitely. Further, it is an assembly of small stampings. It is imperative from a production standpoint that we have the finest steel possible," says Carl M. Joslyn, plant manager of the Shu-Lok Fastener Division of Talon, Inc., shown above (left) with Shu-Lok sales manager David Dibbell.

"Rejected fasteners result not only in material loss, but an uncommon amount of assembly time is wasted. Precision, strength, consistent analysis—reasons why we use stainless steel and buy quality from *Sharon Steel Corporation, Sharon, Pa.*"

SHARONSTEEL **SHARON** *Quality* **STEEL**

Editor's mail

→ *from Page 6*

having a considerable background in the materials and physical embodiment configuration of appliances, articles that deal with the conversion and control of energy tend to round out the whole a little better, and put it into the class of product which is engineered rather than brilliantly tinkered.

Marvin A. Fuller, Staff Engineer
Whirlpool Corp.
St. Joseph, Mich.

The vending industry

Gentlemen: The special section devoted to the Automatic Merchandising Equipment in the May issue of MPM was very timely and most interesting from our vantage point. As a supplier to this industry, naturally material of this type is most welcome.

However, I would like to refer to the Industry Review contained on the index page of this section. In paragraph two, it states that there are 150 firms producing all types of machines; then in paragraph four it notes that 130 companies reported their production, etc. Could you advise the source of this data, as it is somewhat at variance to what we have accumulated and, naturally, we always like to have available more exact and detailed information. Also wondered if this same data came with a breakdown by type of machine manufactured?

Thank you for your cooperation. Would like to add that your publication has been read for some ten years, and have found it most rewarding.

Harve R. Watters, Manager, Market Research
The Faultless Caster Corp.
Evansville, Ind.

The source of our information on the automatic merchandising industry is the National Automatic Merchandising Association, 7 S. Dearborn St., Chicago 3, Ill. They have available a 1959 Directory of Automatic Merchandising which sells for $4.50 per copy. It contains much of interest to suppliers and manufacturers, and a breakdown of each type of vending machine produced will be found on page 27 of this Directory.

The Editors

Porcelain enamel on aluminum

Gentlemen: In your June, 1959 publication, Page 44, there is an article on "New plant design for porcelain enamel on aluminum." We are very interested in this article, and would like to have a copy of same.

Joseph Eisenberg, President
Almag Chemical Corp.
Baltimore, Md.

Tear sheets have been sent to Mr. Eisenberg.

The Editors

PEMCO GIVES LIFE TO THE AXIOM:

MIND OVER MATTER

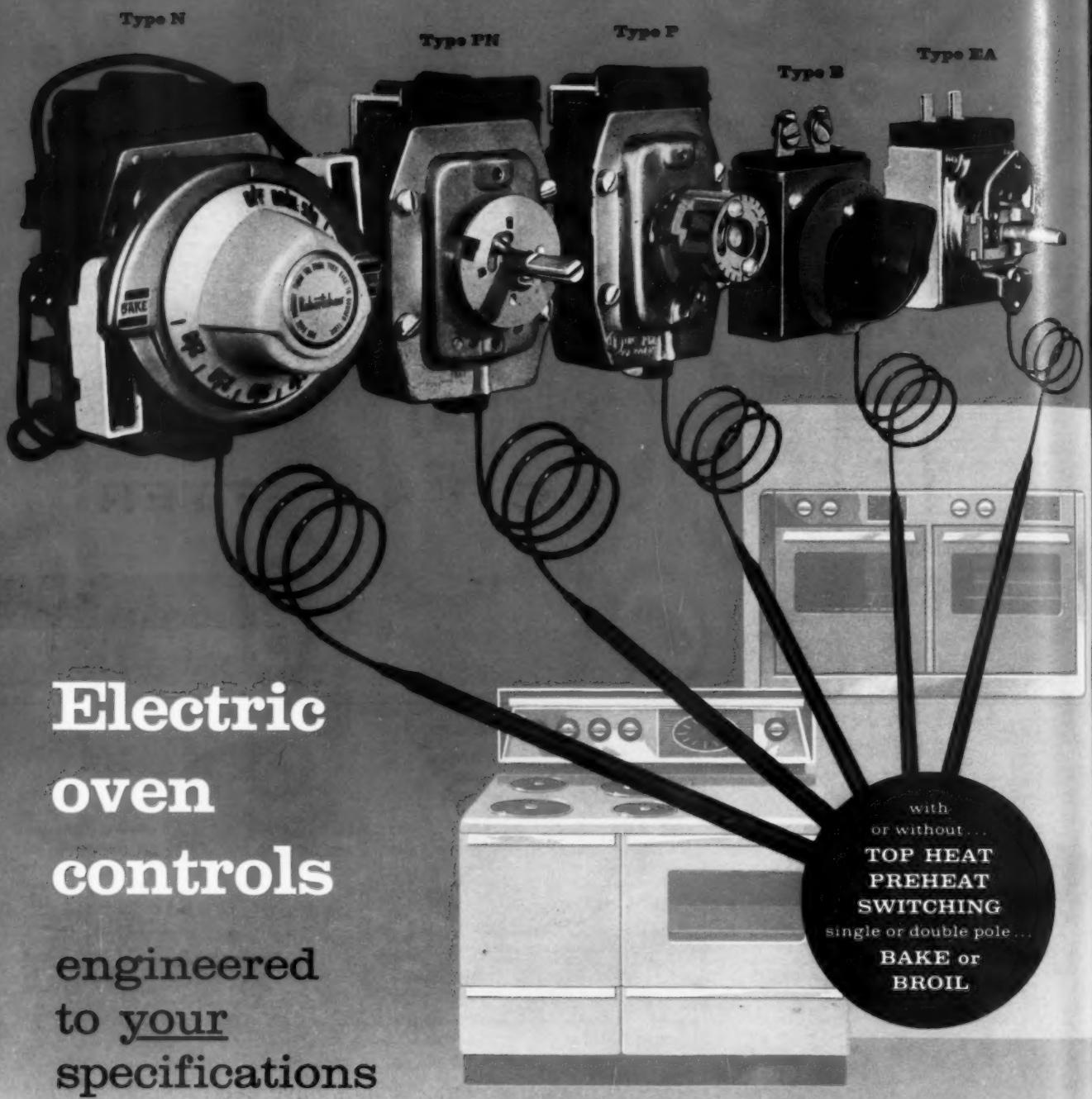
For fifty years, Pemco minds have been responsible for many advances in ceramic products and processes. These advances—and those yet to come—stem from a thorough knowledge of the behavior of inorganic materials, plus the boldness to change a method or create a new method of application to achieve a planned result.

RESEARCH AND A FLAME

PEMCO

Ceramic frits, inorganic pigments, vitrifiable glass colors

BALTIMORE 24, MARYLAND



Electric oven controls

engineered to your specifications

with
or without...
TOP HEAT
PREHEAT
SWITCHING
single or double pole...
BAKE or BROIL

You'll find a dependable Robertshaw electric control for your every modern oven requirement—free-standing or built-in. These controls, developed through a quarter century of electrical design know-how, incorporate Robertshaw's famous standard of quality and trouble-free performance. We welcome your inquiries. Please send detailed specifications, or blueprints if they are available. Indiana Division, Robertshaw-Fulton Controls Company, Indiana, Pennsylvania. VMA 6767

Robertshaw

MR. CONTROLS

THE finish LINE

SERVICE... *STILL something to hope for . . .* was the subject of the Finish Line editorial for July and this page contains a sequel to the air-conditioner case history which was described in the July editorial under the heading. "From April to June."

A brief review of the case history which covered room air-conditioning equipment in the MPM offices is as follows: April 3 . . . Attempted to get pre-summer service on office air-conditioning equipment, to have it ready for hot weather. May 4 . . . Another attempt to get pre-summer service. May 11 . . . Service call. Man said nothing to do to units unless trouble develops. *No oiling necessary.* May 26 . . . Only unit that had been serviced on May 11 (Editor's office) refused to operate. June 3 . . . Service call. Serviceman found fan motor "burned out." June 8 . . . Card advised motor out of stock. June 10 . . . At presstime for July issue (90° weather), no serviceman had appeared.

Here's the sequel

June 26 . . . After several attempts and considerable pressure, a courteous serviceman came with a new fan motor. He said if he could get the motor and drive shaft out without completely disassembling the unit, he could save two hours time — which he did.

The new motor was of different make and different design than the original and, as a result, the metal-circled rubber mountings, which were not provided on the new motor, could not be transferred from the original. The serviceman did attempt to take them off and, as a result, ruined the mountings on the original "burned out" motor.

This serviceman was ingenious, so he made his own shock-resistant mountings by winding the motor mounts with friction tape to a size where the original clamps would fit.

Three hours were required for the motor changeover, which seemed quite reasonable at the price of $15.30. The price of the motor (serviceman said 1/6 hp) was $43.93 including tax *(payable in cash upon completion of the work).*

Thus the total cost of the repair was $59.23, and the air-conditioner is again in operation, doing a good cooling job.

Who wants to buy a motor?

Here's the catch to the service case history just outlined. Possibly on a hunch, and possibly because we felt we might find an interesting end to this case history, we set the old motor aside (1/12 hp of a well known make), and after the serviceman had left we sent it to a capable engineer for checking. First of all, he plugged it into an electrical outlet and found that it would run, although the shaft turned hard. He then took the motor apart and cleaned it and oiled the bearings at each end of the motor *(there were oil holes provided at each end of the motor with felt wicks leading to the bearings).* You may remember that an earlier serviceman had said there were no points to oil in the air-conditioner.

Obviously the oil holes were dry, because they had never been oiled since the units were purchased five years earlier.

After cleaning and oiling, the motor ran smoothly, and the temperature rise was well within the limits specified on the motor housing.

As will be obvious, a factory or metropolitan serviceman who knew his job should have been able to clean the motor, oil it properly, and save us about $45.00 to $50.00 of a $59.00 bill.

What would you do?

Assuming that there may be some air-conditioner manufacturers who will read this page, I'd be glad to have comment as to what you would do with the additional room air-conditioners that have been in use for five years and are still operating satisfactorily. Would you call in another serviceman, or would you attempt to get a local "handy man" who could take the cabinets from the other units, clean them up, and oil the motors — or would you do what one of the earlier servicemen had suggested, let them run until "something goes wrong?" *(*see postscript)*

We call your attention to the first of a series of case history features from various parts of the United States, which we have been planning for some time, to point up the situation at the user level to our OEM *readers. In this connection, we want to stress the fact that* MPM *does not go to distributors, dealers, or to users. Its circulation is confined strictly to the* OEM *level.*

This first feature, by Max Blackman of The Houston Chronicle, starts on page 26 of this issue.

It is the purpose of these editorials to further emphasize the very serious situation with respect to appliance service at the user level.

Certainly there will be no attempt to minimize the difficulties involved in correcting an unhealthy situation.

As we told members of AHLMA at their recent national meeting, if we knew the final answer to smoothing out this service problem, we would have a quick answer to our first million dollars.

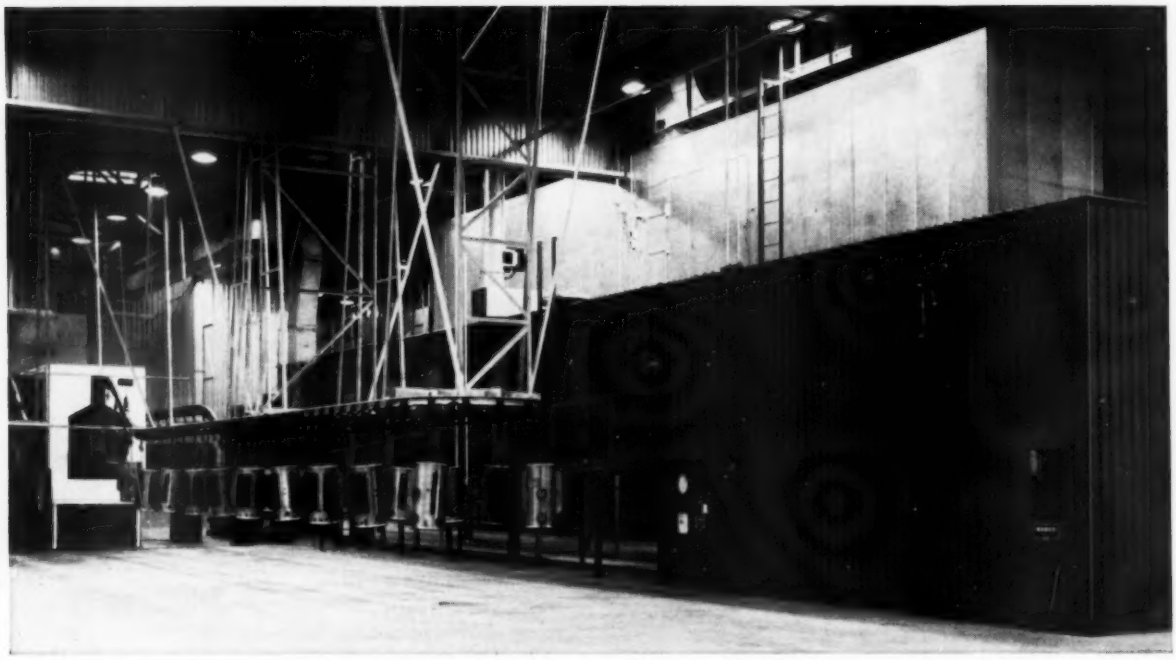
Nevertheless, the problem is here, and until we do have better answers than are currently available, it would appear that the future of the appliance business is in a hazardous position.

Dana Chase

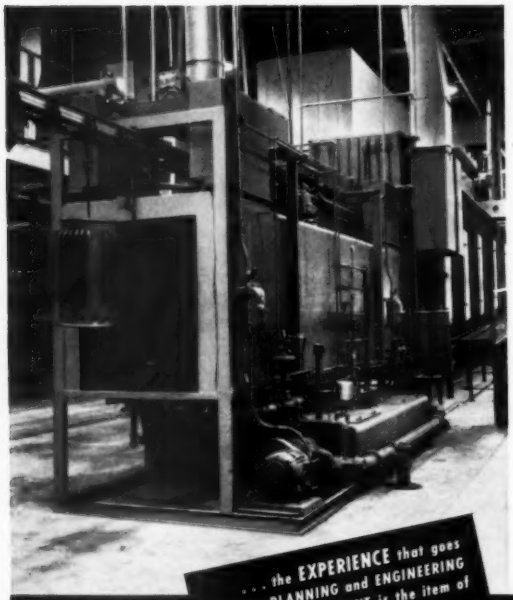
EDITOR AND PUBLISHER

*P.S., Apparently someone reads our editorials. A long distance call came from a manufacturer of air-conditioners, who must have been psychic. He "had a feeling" that his company had sold the MPM air conditioners. He wants to purchase the old motor and use it in his service school. More power to him. He can have it, with our blessing, and with our hope that it may help to get the servicemen "on the beam."

FINISHING SYSTEMS...



Mahon Combined Flow Coating and Spray Painting Machines Paint Transformer Tanks Automatically at Westinghouse!



. . . the EXPERIENCE that goes into the PLANNING and ENGINEERING of MAHON EQUIPMENT is the item of GREATEST VALUE to YOU!

In a complete automatic Finishing System, recently installed by Mahon in the Westinghouse plant at Athens, Ga., transformer tanks with recessed bottoms are painted automatically, inside and outside, in an inverted position as they pass through specially designed, combined Flow Coating and Automatic Spray Painting Machines—tanks are rotated as they pass through the two simultaneous coating processes. Four coats of paint are applied and each is oven-baked on one continuous line that passes through Four Automatic Painting Machines—one is shown at left.

Other Mahon equipment in this Westinghouse plant includes a Transformer Coil Dehydrating Oven and a second Complete Mahon Finishing System for applying the final coat on completely assembled transformers.

If you are considering a new finishing system, or any unit of finishing or processing equipment, you will want to discuss methods, equipment requirements and possible production layouts with Mahon engineers . . . you'll find them better qualified to advise you, and better qualified to do the initial planning and engineering which plays such an important role in the ultimate operating efficiency of specially designed equipment of this type.

THE R. C. MAHON COMPANY • Detroit 34, Michigan

Sales-Engineering Offices in Detroit, New York, Chicago and Los Angeles

Engineers and Manufacturers of Complete Conveyorized Finishing Systems: Metal Parts Washers, Metal Cleaning and Rust Proofing Machines, Conveyorized Cleaning and Pickling Machines; Dry-Off Ovens, Spray Booths, Electrostatic Spray Enclosures, Flow Coaters, Dip Coaters, Finish Baking Ovens, and Paint Stripping Equipment; Core Ovens, Soldering Ovens, Dehydrating Ovens, Heat Treating and Quenching Equipment for Aluminum and Magnesium; Dust and Fume Control Installations, and Many Other Units of Special Plant and Production Processing Equipment.

See Sweet's Plant Engineering File for Information and Representative Installations, or Write for Catalogue A-659

MAHON

"Industrial Stethoscope" aids production quality control

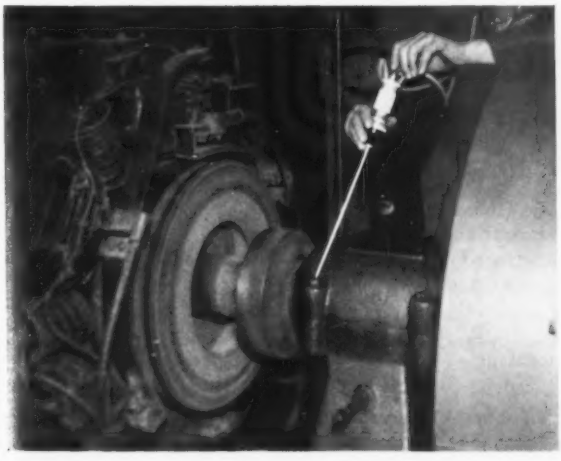
DEFECTIVE AND FAULTY MACHINERY has always posed a problem for appliance manufacturers interested in high production quality control. With this in mind, an instrument of advanced effectiveness has been developed for fault and defect detection in machines and engines. In addition, it detects leakage of air, gas, and fluids.

Called "Airsonic," the instrument can be used on pumps, compressors, turbines, electric motors, convertors, gauges, testing equipment, etc.

Since the detector is non-electric, it has no power element, thus eliminating sound distortion. A regulator knob permits the operator to tune in and isolate sounds, much as one tunes in a radio. The knob is also used to raise or lower the volume of a given sound to suit the operator's range of hearing.

Built to resemble a stethoscope, the ensemble includes a horn for locating general direction of sound, a metal disc for determining vibration, and four probes. Two of the probes, one short, one long, are used where there is no exposure to electrical current; one is used where electrical current is present, and the other probe is used for locating leaks of gasses or vapors.

Advantages claimed for the new instrument are operating convenience, non-distortion and good amplification of sound, lightweight portability, and electrical applicability. For further information, contact Dept. MPM, M. Paquet & Co., Inc., Box 871, Newark, N.J.



Above — The detector can be used to check air-conditioning unit for pump action, flutter valve action, baffle, general action of pistons, vibration, and leaks in flow lines of compressors.

Left — Listening to the bearings of a generator is possible through a patented device which isolates sound. There is no sound distortion, since the instrument has no power element.

a survey of experience and opinions among appliance users in Houston . . . with case histories described in detail

THE PROBLEM

Appliance service in Texas

by Maxine Blackman • FASHION EDITOR, HOUSTON CHRONICLE

MPM EXCLUSIVE FEATURE

Housewives in Houston, contrary to any tall tales about the goings-on in the land of the big rich, do not use their major appliances once and throw them away.

Nor do their husbands shoot the varmints full of holes at the first sign of running difficulty, although we do know a young dentist who kicked the front in on the family's three-year-old automatic washer after it stopped up and overflowed.

One way to sell a new washer?

However, you must admit he had due cause. It was the maid's day off. His wife had gone shopping, leaving him with three children, the oldest being three. After chasing the oldest out of the street, trying unsuccessfully to get number two to eat, and two hours of walking the floor with number three, an overflowing machine of diapers was too much.

A new . . . was delivered at the dentist's address the next day.

Ordinarily, the Bayou City homemaker, like homemakers everywhere, calls the serviceman with her appliance problems. And here, it seems, is where her problems really begin.

No appliance instruction books

Take Mrs. S. When her six months old washer stopped running, she couldn't wait the two weeks the department store service department said it would take to get a man out.

With six youngsters, and a seventh due in three months, there wouldn't have been room in the house two weeks for that many dirty clothes — if they had that many clothes to go without washing for that length of time. So she ignored her warranty, which was still good, and called a neighborhood serviceman who could get there in a hurry.

Her biggest gripe is that the salesman's pitch and quick instructions are never the same as those she receives from the serviceman. And while she owns a . . . washer, . . . dryer, . . . refrigerator, a freezer, air-conditioners, and almost any appliance she has heard of, she has yet to receive a book of instructions.

Three washers plus hundreds of dollars in nine years

Then there's Mrs. H, Jr., who has a coffee break acquaintance with half the servicemen in Houston. The only trouble is she is footing the bill for the coffee as well as the repairs.

Her story begins almost nine years ago. As if having twin daughters weren't enough of a shock, the day she brought them home from the hospital, they discovered their brand new washer wouldn't work.

During that first year of trying to get used to twins and boiling diapers on the stove, the repair bills totaled more than $300 for three new motors and numerous small repairs. She was put on the serviceman's regular run, which is three times a week in her area.

When a son was born on the twin's birthday, she grew somewhat desperate over the laundry situation and purchased a new washer (same brand). Within just a few weeks, the repairs began again.

She went to work and left orders for the maid to keep the coffee pot full for the repair men.

In 1957, she bought a . . . . (another make). As soon as the warranty ran out, the machine began leaking. She called the service department *(of the company where purchased)* on Monday. It was Friday before he came.

After checking it, he said the bill would be $12.17. Because no money had been left with the maid, he left and said he'd come back and fix it Tuesday when he could get the money.

Mrs. H had $2500 in cancelled checks for purchases made within the last two years *(from the company from which the washer was purchased)*, so was angry over the refusal to fix the washer without the cash on hand. An independent repairman was called in, and when the sales company's serviceman came on Tuesday, he was turned away.

In nine years, they have spent more than twice the cost of their three washers for repairs. Philosophically, she says they haven't spent much on soap. Each repairman brings along his own box of All for testing. Currently, their two year old dryer needs repairs, but they have neither the cash nor the heart to call in a serviceman.

Of course, there can be other problems, too. Mrs. H has an ironer in perfect condition, which the maid refuses to use because it is too complicated.

The retailer's cry — too complicated

Too complicated, is the cry of the retailer (. . . .), who claims that 65 per cent of his store's service calls would be eliminated if manufacturers made their instruction books so that a woman with an ordinary college degree, not just mechanical engineering, could read and understand them.

He blames the manufacturer for too much sell and not enough plain "how to."

Three machines — no sale!

Whether or not his diagnosis of better instructions would have helped Mrs. T, it's hard to say.

A college graduate, wife of a young doctor, and a new mother, Mrs. T. purchased a . . . . combination in September, 1958.

Her first complaint was that clothes were coming out stiff and harsh. When a service call did not improve the operation to her satisfaction, the store installed a new machine.

However, the second machine continued to leave the clothes stiff. And the baby's skin had broken out as a result of all the soap left in the clothes.

The store said she was using too much soap and advised her to use 1/4 cup of . . . . She tried, but still the rinse water remained murky and clothes seemed rough.

By the end of January '59, she had been visited by the factory serviceman, the home economist, and wholesale distributors, as well as the store's serviceman, who finally agreed that the machine was not working properly.

February, a third machine was installed. A serviceman, home economist, and the credit manager went out to check on this one. But because there was no book of instructions, the housewife was sure it was a used machine and refused it.

The store claims they uncrated it and tested it in the warehouse to make sure it would work. At this stage, the store and the housewife reached a stalemate. They won't sell her another machine, and she wouldn't buy one from them.

Unfortunately, the retailer isn't the only one to suffer, *for the housewife is bitter over the manufacturer "that obviously has nothing but lemons."*

One way to get good service

In the case of Mrs. D., there is proof that it pays to go to Sunday School.

When, in March, the D's moved to their new home just a few blocks from their old neighborhood, the movers failed to bolt down the tub of the washer.

She called the appliance store's service department twice with no results. She washed out enough clothes by hand to get her two small sons, aged three and eighteen months, to Sunday School on the following Sunday.

There she discovered the man sitting next to her was the owner of the store. "I guess I looked so pathetic when I mentioned the moving and all that he thought he'd be neglecting his Christian duty not to do something. Anyway, he sent a serviceman the next day," she said.

Nor did she have any problem getting him there a few days later to replace the element in her dryer.

Here, clearer directions would have helped. For Mrs. D. thought she was following them in cleaning the filter on her new dishwasher, but when she took the filter out, the motor fell out.

Fortunately, the serviceman was there fixing the dryer when it happened and assisted her in putting the motor back.

A defrosted Christmas

A 1959 home freezer stands as a stark reminder of a ruined Christmas to Mrs. B. Last November she bought a 1958 freezer. In three days it started defrosting. She called the serviceman, then discovered that her husband had accidentally unplugged the freezer while working on Christmas decorations.

She tried to call the serviceman, but he was already on his way, so the store said she would have to pay the service charge anyway.

Two weeks later it defrosted again. This time the serviceman was not so quick to answer her call, and a freezer of food was lost.

The rubber around the door proved defective and was replaced. Two days later, the freezer defrosted again, spoiling among other things, the Christmas turkey.

She couldn't get a repairman until after the holidays. This time he put a new door on, but the defrosting continued. Finally the store credited her for the freezer and sold her a '59 for an additional $100. Now she's lost her nerve and is afraid to put anything more perishable than a loaf of bread in it.

Others tell of rushing food to the neighbors, or storing it on the window sill. The latter is not very effective, since freezing temperatures are rare in Houston.

Despite these extreme cases, the average complaint is not drastic — a tap needs tightening or the appliance isn't level. But since she can't fix the appliance herself, the housewife is most upset by being put on a waiting list to get service and having to spend six dollars and up per call.

Few of the women whom I spoke with at bridge parties and coffee klatches were concerned over their appliances being outdated each year. They have come to accept that from the new car advertising, if nothing else.

Too many gadgets

And many with newer models feel they are too complicated to try to use all the gadgets on them. For instance, not one of the housewives at one bridge party bothered to use the timers on their stoves. Too much bother to set *or they had never learned how.*

Nor do they put their husbands' wash and wear suits in the automatic. "Who can be there, the minute they are done?" they ask, so they send them to the cleaners.

All these women attended college, many of them Yankee schools, and all are in an income group who can afford most of the new modern conveniences if they don't have to spend twice as much to keep them going.

One housewife, a former home economics teacher, suggests that a manufacturer who really wanted to sell his line and be sure the buyers would know how to operate it ought to set up one-day schools. The manufacturer's home economist could teach the class, demonstrating not only all the new gadgets, but showing owners of older models how they can get the most out of their appliances.

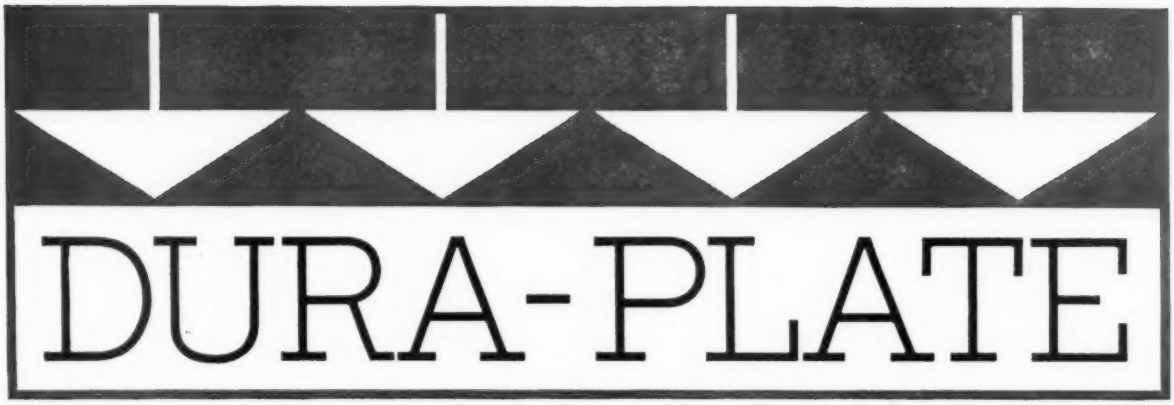
NOTE: Case histories are documented for MPM evidence files as to user's names and addresses, appliance brand names, sales outlets, etc., but the purpose of this feature is best served by deleting all such references.

EDITORIAL NOTE: Maxine (Max for short) Blackman is Mrs. Robert Blackman of Houston, Texas.

After five and before nine, Max is homemaker for the Mister and two-year old son Harris. During business hours she is fashion editor of the Houston Chronicle.

With a bachelor's and master's degree from Southern Illinois U., experience as a high school teacher, service as publicity coordinator for one of Texas' largest department stores, and responsibilities in both home and business, we feel Max is a logical contributor for our editorial stories on service.

BROWN LIPE CHAPIN



New Chrome Plating advance gives bright work new dimension in durability!

Here's a shining example of the many benefits available for your products at Brown-Lipe-Chapin. It's Brown-Lipe-Chapin's new DURA-PLATE! This new and unique process of chrome plating gives your product active sales appeal with the rich quality of gleaming chrome . . . and adds a new depth of durability that will last the life of your product.

DURA-PLATE consists of two layers of laminar and columnar nickel with a layer of chrome *five times as thick* as produced by conventional methods. The result is a surface almost impenetrable to corrosion. DURA-PLATE can be applied on any product made of steel, or on zinc die castings . . . at no extra cost!

DURA-PLATE is the result of the advanced research, the development of new techniques and thorough testing that continue at Brown-Lipe-Chapin to help make your products better.

DURA-PLATE is typical of the many benefits you get from Brown-Lipe-Chapin when you call on their extensive facilities for die casting, metal stampings of all kinds, electroplating, anodizing and painting.

If you're looking for a bright difference in your product, call on Brown-Lipe-Chapin, Division of General Motors Corporation, Syracuse, New York.

GM GENERAL MOTORS

RELIABILITY by BROWN · LIPE · CHAPIN

DIVISION OF GENERAL MOTORS CORPORATION

Electrical resistance of paint keys solvent

Ransburg Electro-Coating Corp. has announced the development of a technique for improving the sprayability of coating materials for electrostatic application. They are also making available a test instrument that is useful with either automatic or hand gun equipment.

The electrical resistance of paint has an influence on how the paint performs in airless electrostatic spray equipment.

The test method amounts to measuring the paint's resistance to electric current flow, then adjusting it to an established range by selection of proper solvents. Simplicity of this technique makes it of special importance to the paint user. It can be used in his paint mix room without the need of a trained laboratory technician.

Heretofore, selection of the solvent has been based on compatibility with the binder, resin, and pigment, the desired viscosity evaporation rate, film appearance, and cost. Now the solvent's influence on the electrical resistance of the paint mixture may also be considered.

The following resistance range is recommended for best performance of coating materials: 50,000 - 1,000,000 ohms for automatic equipment: 100,000-1,000,000 ohms for use with the hand spray gun. These values are based on the test equipment.

Electrical resistance of paint mixture is measured by the new tester to determine if it is in proper range for best performance in airless electrostatic spray. Tests can be made at any viscosity and in any size or kind of container.

HOME LAUNDRY PROGRESS FOR THE 1960's

1959 AHLMA convention

self-service laundries, engineering and research, materials and components, the customer's viewpoint, and service get the attention of association members

AN MPM STAFF REPORT

J. H. Goss, featured luncheon speaker: " . . . *The 'something for nothing philosophy' is plaguing the appliance industry.*"

EXCLUSIVE MPM PHOTOS

HOME LAUNDRY PROGRESS for the 1960's was the general theme of the American Home Laundry Manufacturers' Association's convention program held at the Edgewater Beach Hotel on June 19. Following committee meetings and an officers' reception held on June 18, the membership reported early on the morning of the 19th for what proved to be as complete a program as would be possible to jam into one day.

The general chairman of the meeting was T. D. Kennedy, laundry product sales manager, Frigidaire Div., General Motors Corp. Chairman Kennedy made it his job to see that the program moved along swiftly, from the first introduction of the subject of self service laundries, through to final adjournment. One of the morning subjects discussed was the defining of the terms to be used by the industry. This subject was covered in detail by Mary Margaret Boyer, director of the home service department, The Maytag Co.

Look for increased engineering and research manpower

Engineering and research trends in the 1960's were discussed by H. E. Van Scoyk, assistant chief engineer, Frigidaire Div., General Motors Corp.; George D. Conlee, chief engineer, Speed Queen Div., McGraw-Edison Co.; and William E. Mahaffay, vice president, engineering, Whirlpool Corp. In leading off for this group of top engineering talent, Van Scoyk presented a picture of the great increase in total manpower required in research, design, styling, drafting, model building, testing, and other supporting activities, as applied to home laundry products by manufacturers of the end product. For example, the total manpower in this classification for 1959 is 1135, or approximately 2¼ times those employed in 1949. The total manpower forecast for 1964 is 1439, and for 1969 it is 1548. The increase between 1959 and 1969 is estimated as 36 per cent, which is somewhat less than was actually realized during the past ten years.

(Left to right) — G. D. Conlee, H. E. Van Scoyk, T. D. Kennedy, and W. E. Mahaffay. Kennedy was chairman of the Convention committee, and the others are members of the Engineering and Research panel on trends into the 1960's.

He contrasted these figures with the 87-per cent greater sales that has been forecast during the same period that the 36 per cent represents for engineering manpower. Van Scoyk stressed the great competition for engineering graduates, and urged the industry to take all necessary steps to ensure a fair share of qualified graduates.

Supplier manpower up

Van Scoyk reported the results of a survey of associate members representing materials and components and home laundry aids. He said, "The percentage increase in activity of those reporting is more, over the past ten years, than laundry *product* manufacturers and they *(the associates)* are forecasting a higher rate of increase for the next ten years. When recognizing the contribution our associates make to our industry," he continued, "it is indeed gratifying and reassuring to find a healthy outlook."

In referring to the multiplicity of models in current lines, Van Scoyk

offered a typical example of a company which had two washers and one dryer in 1949 and now has fifty washers and twenty-eight dryers, including all available colors.

"The demand of customers, salesmen and dealers for more and more use features and a greater range of washing functions," said the speaker, "is exceeded only by their demands for products that are easy to understand and simple to operate. And this is where the fun begins." Van Scoyk said, however, he was confident that capability will keep pace with the need, regardless of increase or decrease in design complexity. His closing plea was to concentrate on *basic improvements* in washing and drying, to concentrate on *simplified operation and use, greater reliability, ease of installation and service,* and *lower cost.*

Combined research need

Whirlpool's Mahaffay expressed the opinion that the engineer and the salesman would never see eye to eye with respect to the model requirements of a line of home laundry equipment. He feels that the industry is coming of age and should be at a point where consideration can be given to "fewer models."

In engineering the laundry machine of the future, said Mahaffay, consideration must be given to (a) energy, (b) water, (3) detergency and (d) textiles. The future of the industry should be based on the *combined* research on all of the variables involved.

This speaker also stressed the fact that not all competition comes from the competing domestic manufacturers. The European manufacturers, he said, are on their toes from an engineering standpoint, and *are* cooperating on research with detergents, textiles and water treatment interests.

Materials and component trends

D. M. Strathearn, vice president and director, Controls Co. of America, headed a panel of representatives for the materials and components producers. The panel included Carl C. Daily, sales manager, Western Div., The Firestone Tire & Rubber Co. *(rubber);* Richard L. Campbell, director of engineering, Detroit Controls Corp. *(valves);* Robert M. Buddington, vice president, sales, Inland Steel Co. *(steel);* C. O. Hutchinson, manager, industrial sales, The Glidden Co *(finishes);* and Rose V. White, laundry specialist, Home Service Dept., Corn Products Co. *(laundry aids).*

Don Strathearn . . . believes that automation is the "magic word" in instrumentation, and that the greatest supplier of automation in the appliance field is the home laundry group. Strathearn feels that more and more controls are coming on home laundry equipment, but they should be of such a nature that they do the work for the housewife—*not cause more work.*

Carl Daily . . . said that, while home laundering of the future may bring entirely new problems, currently we are still dealing with a sealed system of hot and cold solutions and drying in heated air.

Therefore, he said, flexible rubber pipes, snug gaskets, flexible rubber blocks and mountings, and couplings must be used, tailored for a restricted space, and designed to last for years without repair.

Daily pictured the change from crude rubber to synthetics — with the resins and chemicals to add special purpose characteristics. He feels that newly-developed adhesives for bonding have definite promise for future components.

Richard Campbell . . . anticipates significant changes in valves and similar components. For example, water inlet flow control valves, including definite flow control, will handle variables in water pressure.

There will be demand for dispensing valves for adding automatically the required additions, at the required time, and in the required quantities, said Campbell. He feels there are two missing requirements: (1) storage of all required products, and (2) means of changing the quantity of products to be dispensed. The answer to these questions is needed to get a fully automatic system. Completely automatic devices and dispensing valves can be produced, he said, and should be available for 1961.

Partners through design

Robert Buddington pointed out that, not long ago, enameling iron or low carbon sheet steel controlled the design of the end products in the home laundry field, as far as the fabrication of cabinets and internal parts was concerned.

Now, he said, formability has been increased; galvanized can be formed or spun; enameling iron (one coat) will be lower in cost than in the past; and, in addition, there are specialty materials such as aluminized steel. Colored stainless steels and plastic coated, deep drawing steels are now a reality. Also, there are textured metals and patterns applied after the application of a plastic coating.

Steels of the future will be higher strength steels, permitting lighter gauges; there will be better drawing

H. L. Travis presents David Hayes with Lifetime Membership in AHLMA.

Rose V. White

C. O. Hutchinson

H. E. Van Scoyk

R. L. Campbell

R. M. Buddington

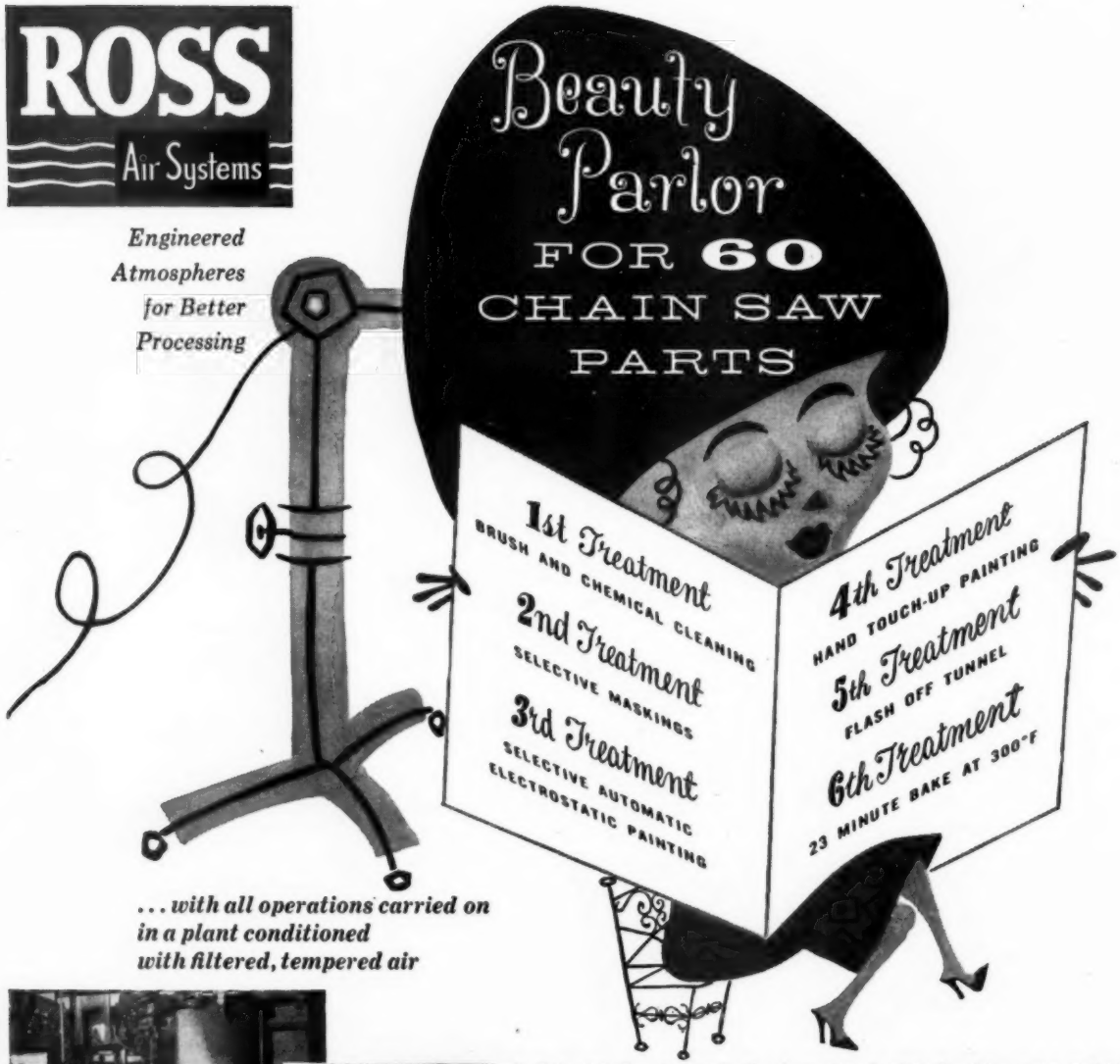
C. C. Daily

D. M. Strathearn

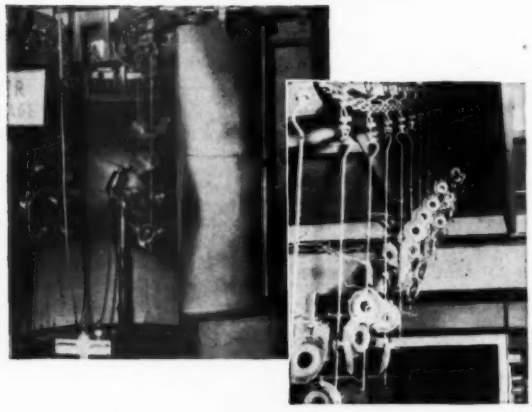
G. D. Conlee

ROSS
Air Systems

Engineered Atmospheres for Better Processing



. . . with all operations carried on in a plant conditioned with filtered, tempered air



This 6th Treatment is the key step in this flexible paint finishing system, recently designed and installed by Ross Engineers for the Homelite Division of Textron, Inc., at its new Gastonia, N. C., plant. It is in this carefully engineered baking oven with its interlocking controls that the paint in four different colors is securely anchored to the aluminum or magnesium surface and given its attractive durability. Here is the well-known Ross 'Engineered Atmospheres for Better Processing' being put to use.

Industrial Paint Finishing Systems has been the business of Ross Engineers since the early twenties. We design, manufacture and install. If it's a metal surface you want paint-finished, why not discuss your requirements with a Ross Engineer? His experience and broad knowledge of the subject should be invaluable.

M-R

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quality, more color, and texture; and, he said, these products will be available at prices acceptable to the ultimate consumer.

Increasing expenditures in research and development will result in more new products, said Buddington.

Hutchinson . . . suggested four possibilities in the finishing field for the early 60's. (1) Aromatic reducible flow coat primers for washers and dryers. (2) Increased study and possible use of so-called acrylic (coatings) finishes as a one coat system. This would require radical changes in design which would not be practical at present. (3) Blue sky — solvent free painting systems, water reducible or emulsion coatings (autos are using primers with good results — sample panels okay on laundry appliances, but not yet ready for production). The speaker did suggest that, if a producer is planning new equipment for the late 60's, this type of product should be given consideration. (4) Porcelain enamels in the lower firing ranges are coming.

Rose White . . . indicated the overall trend in laundry products was to "specialization." She predicts great improvement in automatic dispensers and suggests that there must be more education on bleaches in the 60's.

Goss reports on state of industry

J. H. Goss, vice president, Consumer Products Group, General Electric Co., spoke at the AHLMA luncheon, where Homer L. Travis, vice president, sales, Kelvinator Div. American Motors Corp., was presiding. The "something for nothing philosophy" is plaguing the appliance industry. This type of problem, Goss said, is more important than the fine statistics on units and dollars.

Before the war, customer benefits were sold, said Goss. After the war, no selling was necessary. Therefore, in spite of the fact that we have many customer benefits and good values that can and should be sold, the simple selling facts have been forgotten.

It is a great temptation, he said, to base sales on the ability to over-produce. "A reasonable share of the business over a reasonable period of time, at a fair profit, is the only way any business can continue." He feels that the distribution system gets too much of our effort, instead of the final customer.

The service problem

We have taught our customer, Goss said, that appliances don't require service. Present appliances, due to complicated design, actually increase exposure to service. Even with metropolitan service being offered by the factory in major cities at least 60 per cent of GE service must be rendered by independent dealers or servicing people, according to Goss, and, he said, "Service calls cost more than a doctor's call." This speaker is all for selling the idea that normal service is to be expected, and for educating the public as to what reasonable service is. Service operations should result in a fair return, in his opinion, and over 90 per cent satisfaction should be maintained, even "out of warranty."

The customer viewpoint

L. C. McAnly, Jr., manager, market research, The Maytag Co., and Jack D. Lee, manager, Laundry Equipment Department, Westinghouse Electric Corp., gave a comprehensive, illustrated report on an AHLMA consumer research sampling of the industry's consumers, with Rose Marie Burke, editor-in-chief, Forecast for Home Economics, evaluating the research. The results of this job are now in the hands of AHLMA members.

Third man theme and — the future

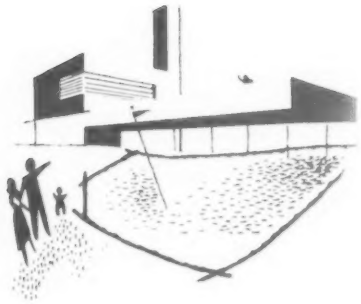
Joseph Smith, public relations, Westinghouse Electric Corp., headed a panel of publication editors who had been requested to evaluate the AHLMA program and to present individual opinions concerning the future of the industry. Speakers included Jack Adams, editor, Mart; Jack Blood, major appliance reporter, Home Furnishings Daily; Dana Chase, editor, Metal Products Manufacturing; Victor C. Petchul, editor, Appliance Manufacturer; and Ken Warner, midwest editor, Electrical Merchandising. While the pictures presented by the editorial representatives were in the main optimistic, a number of specific suggestions were given to home laundry manufacturers, principally on the subjects of sales and service policies.

QUEEN PRESENTED . . . A blue-eyed Milwaukee homemaker and model, Kay Thomas, was crowned "Mrs. Home Laundry Queen for 1959" at a cocktail party preceding the AHLMA banquet.

Presentation of title and crown was made by J. B. Murray, executive vice president of Speed Queen Div., McGraw-Edison. Speed Queen has sponsored Mrs. Thomas in the nationwide competition held annually by METAL PRODUCTS MANUFACTURING.

The new queen was awarded a three-day "on the town" visit (for Mr. & Mrs. Thomas) with headquarters at the Edgewater Beach, and a "Royal Pair," Speed Queen's first line atuomatic washer and dryer.

Appliance ideas highlight Home Furnishings Market



two-speed washer, portable dehumidifier, 23-inch TV among latest developments

Television set by Sylvania features 23-inch, square-cornered, aluminized picture tube, and has turquoise or bronze finish.

AN MPM STAFF REPORT

CHICAGO PROVIDED THE SETTING for the International Home Furnishings Market, June 15-26, and leading appliance manufacturers showed their latest wares.

Television provided a number of new developments. Sylvania Electric Products, Inc. announced the first full line of 23-inch sets, made possible by a square-cornered picture tube. An outstanding example of this line is the 23T12 table model, which features an all-metal cabinet. It has a 23-inch, bonded shield, aluminized picture tube with 277 square inches of viewable area. The set is finished in either turquoise or bronze.

A hooded, portable transistor television set provided the center of interest at Philco's display. Designed for ease in handling, the set weighs only 15½ pounds, including battery and charger, is 8⅜ inches wide, 5⅝ inches deep, and 16⅝ inches high exclusive of the handle and visor. It has a full set of controls and an eye-level adjustment with tilting base. The set can be used on standard ac current while charging.

Eight new additions to the RCA Whirlpool line of cooking units, including four free-standing ranges, three built-in gas ovens, and an electric drop-in counter surface unit, were shown. The free-standing units are low-priced models—two 40-inch electric units, and 36-inch and 30-inch gas ranges.

The 30-inch gas range has a thermostatically controlled surface burner, an oven window permitting full view of the 24-inch wide, 15½-inch high, and 19¾-inch deep porcelain enamel interior, an interior oven light, and a top light which provides convenient illumination of the range surface. Panel trimming is chrome, the background aluminum.

Portable dehumidifier presented

Ease in moving is the idea behind Amana's dehumidifier. Three-inch diameter wheels and a carriage-type handle have been added to the unit. An optional "humidistat" can be set to hold a

(Below, left) — Lightolier's "Baguette" has a globe of "plaid" glass over a slim opal glass chimney, and rests on a tripod of sculptured brass. (Below, right) — The Maytag Co.'s "Super Highlander" features slow-speed agitation, automatic water level control, and six selective wash-rinse water temperature combinations.

room at a desired humidity level. The unit is capable of removing up to four gallons of moisture per day.

Amana's contribution to the refrigeration field is a combination refrigerator-freezer with 182-pound storage capacity in the freezer compartment. The unit, which stands less than 60 inches high and is 32 inches wide, has yellow interior coloring. After a year of testing, yellow was selected as the color which would best compliment food, and at the same time blend with the average household color pattern.

Novelty in lamps was provided by Lightolier's "Baguette" line. Resting on a smooth tripod of sculptured brass, a large globe of "plaid" glass is set over a slim glass chimney. The lamps range in height from 18 to 26 inches, and are designed for use where space prohibits using larger lamps, such as on bedside tables, dining room sideboards, and living room shelves.

Two-speed, medium-priced washer

The Maytag Co. unveiled its two-speed, medium-priced washer, the "Super Highlander." The model features slow-speed agitation for delicate fabrics, automatic water level control, and six selective wash-rinse water temperature combinations, including cold water wash and rinse for synthetics. The washer has a zinc-coated steel cabinet, with porcelain enamel top cover, lid, wash basket, and outer tub. Regular agitation is 54 oscillations per minute; slow-speed agitation, 36 oscillations per minute.

Two leading figures in the appliance industry pointed up the optimistic outlook and "fair price" trend of today's appliance market.

Appliance prices steadfast

Westinghouse Electric Corp.'s vice president, Richard J. Sargent, stated that the industry has a long way to go before major appliance prices are in line with increased costs of labor and material. "Wage rates have gone up 50 per cent and material costs have risen 19 per cent in the last 10 years, yet 1959 prices on many major appliances are below 1949 prices on similar models," he said.

Sargent presented a capsule rundown on the market conditions of the various geographic areas of the country. All areas had excellent improvement possibilities for the last six months of the year. He credited this, in part, to increased home-building, stating that home builders are finding electrical appliances a highly effective merchandising tool.

Since the first five months of '59 ran far ahead of predictions as far as sales were concerned (19.5 per cent recorded; 8 to 10 per cent predicted), Sargent said that, "In a few words, the business climate is right."

The "fair price" trend

J. S. Beldon, vice president and general manager, Radio Corp. of America, discussed the "fair price" trend of products . . . a price acceptable to the consumer and profitable to the industry on products which consistently incorporate new features and dependable quality.

"As far as prices are concerned," said Beldon, "we're in that 'rising cost of material and labor cycle' that necessarily contributes to increased price levels. However, everyone is working diligently to hold prices because it makes sense to keep prices in bounds through efficiencies and increased productivity."

Beldon added that this is the year for innovations, and quoted as examples television sets that play automatically a pre-selected 12 hours of programming, a stereo tape player that plays from a handy cartridge and eliminates threading reels, remote control stereo and television, and transistorized clock radios.

This mobile, industrial, ultrasonic washing machine can be plugged into any 110/220 volt, 60-cycle power supply, and is fully automatic in operation. The cabinet and plumbing are fabricated of stainless steel. The first machine of this type was used in the Missile Division of Chrysler Corp. The unit is suitable for use with either solvents or water. It incorporates a power drain and has a re-circulating filter and heating system for the cleaning solution.

PHOTOS COURTESY NARDA ULTRASONICS CORP.

The facts about ultrasonic cleaning

AS ENGINEERS AND PLANT MEN will know, ultrasonic cleaning in industry is not new. For example, we find an article on this subject entitled "Ultrasonic cleaning for industrial applications," which appeared in the May, 1953 issue of this publication, indicating that the process then had its practical applications in the metal products field.

The growth of ultrasonic cleaning for industrial applications has not been as rapid as might have been expected. For one reason, there apparently has not been solid agreement on methods, materials, and equipment. Another deterrent has been the cost of equipment installations. Nevertheless, it is now possible to find installations in plants producing screw machine products, wire products, stampings, ornamental hardware, appliances, valves and fittings, springs, computing equipment, office equipment, automotive, aircraft, etc.

Practically all types of finishing, such as painting, porcelain enameling, electroplating, anodizing, galvanizing, etc., depend to a great extent on the efficiency of cleaning and the nature of the prepared surface for the final quality of the finish developed. Any process which tends to influence the quality of the final product is certainly worthy of consideration.

The advantages claimed for ultrasonic cleaning include high speed in cleaning, the ability to remove all types of soil from hard-to-reach surfaces such as indentations, blind holes, etc., the degree of precision in cleaning, and the opportunity to clean assembled products as a single unit. In addition, when conveyorized cleaning lines are installed for appropriate products, ultrasonic cleaning may be expected to result in a high rate of production. The importance of ultrasonics as a cleaning method may be said to relate to the form of agitation. Sound waves create submicroscopic bubbles which constantly form and collapse. This serves to create severe agitation at the surface of the part being processed. The practical result is the removal of both soluble and insoluble contaminants. Other effects are claimed to be the elimination of surface tension, the breaking up of boundary layer interfaces, and the degassing of solutions.

Equipment requirements

The three major items of equipment required for ultrasonic cleaning are the generator, the transducer, and the tank, although it will be obvious that other equipment and components are required, such as solution lines, filters, heat exchangers, etc. Either electronic or motor-driven generators may be used. These vary for different installations from 110 V. to 650 V., with frequencies from 18 kilocycle to 1 megacycle, and output of from 20 watts to 10,000 watts. The use of frequencies above 18 kilocycles tends to prevent an audible noise factor. Then, too, the higher frequencies are helpful where blind recesses must be cleaned.

Transducers serve to convert the high frequency electrical energy delivered by the generator into high frequency sound waves.

Unlike other forms of agitation, sound waves flow perpendicular to the face of the transducer, instead of spreading radially throughout the solution. Where only certain areas of large pieces need ultrasonic cleaning, the radiation can be focused on these areas. To assure thorough cleaning of large parts, it is considered advisable to convey them through the tanks past a series of transducers.

Tanks to be used for ultrasonic cleaning may normally be specified as stainless steel. Filter systems should be provided to remove insoluble particles of soil from the solvent.

While it may sometimes be possible to convert conventional cleaning tanks for ultrasonic cleaning through the use of submersible transducers, it is extremely important to hold tank size down to an absolute minimum required to accommodate the size of the parts being cleaned.

Of interest to metal finishers using baskets for carrying parts is the fact that ultrasonic vibrations are said to penetrate solid sheet steel more readily than perforated plastic or metal wire

mesh. For this reason, when transducers are placed at the side of the tank, a thin stainless steel sheet wall may be used in combination with a mesh-bottom basket, or where the transducers are placed at the bottom of the tank and focused upward, the basket may have a flat sheet metal stainless steel bottom, and open-mesh sides.

Cleaning solutions important

Ultrasonic cleaning, when used with the proper solution, serves both as a "physical" cleaner, through cavitation of the liquid, and as a chemical cleaner, dependent upon the chemical nature of the solution used.

Whether the solution is a solvent, acid, alkali, or detergent, its proper selection is important, just as in the case of soak cleaning, spray washing, etc.

The temperature of water said to be best suited for cavitation is 140° - 160° F. Vapor pressure conditions are undesirable as water nears the boiling point. With trichlorethylene and other similar solvents, cavitation is possible at room temperature.

Wetting out is extremely important in this method of cleaning. The addition of a detergent to the working fluid lowers the surface tension and decreases the amount of energy lost in forming interfaces. Therefore, with the appropriate use of detergents or wetting agents, the energy required to do a specific cleaning task can be greatly reduced. It is suggested that solutions for ultrasonic cleaning should have a density the same or slightly higher than water. They should have relatively-low vapor pressures and low viscosity at working temperatures. Like any other cleaning method, the solution should have properties essential for efficient removal of soil, while at the same time causing no undesirable effect on the metal surface.

Mechanical versus chemical

It is felt by some authorities that the results from the early use of ultrasonic cleaning were a disappointment because of the application of the process to work that was largely a chemical rather than a mechanical problem. When the problem is essentially one of chemical bond, too much responsibility should not be placed on mechanical action, even though ultrasonic activation of a chemical solution can be expected to accelerate the rate of reaction.

While this brief article has concerned itself primarily with metal cleaning or the development of a clean surface for later processing, ultrasonics have also indicated definite possibilities in connection with etching, anodizing, electropolishing, plating, and chemical milling. For instance, in connection with chemical milling, it is claimed that an ultrasonically activated bath results in uniform and rapid etching and a resultant desirable satin finish.

Ultrasonic wet-process cleaning can be said to be in direct competition with vapor degreasers, spray cleaning equipment, and conventional soak tank cleaning. There seems little doubt that the process has proved itself for many specific applications, but the equipment manufacturers seem the first to agree that generalization as to its use is not desirable. The manufacturer who feels he has a logical application should, therefore, submit the problem to one or more producers of ultrasonic equipment for recommendations and an outline of suggested equipment, materials, and costs.

This complete ultrasonic system includes separate 35-gallon ultrasonic cleaning and rinsing tanks, and an eight-cubic foot drying chamber equipped with a 4,000-watt heater and blower. The units are housed in a metal cabinet 12 feet long, with a stainless steel counter top. The original application of this design was for industrial use, such as washing missile parts at General Electric Co. The manufacturer, however, suggests its possible use as the restaurant, hotel and institutional dishwasher of tomorrow. The system has a one-kilowatt, 40-kilocycle ultrasonic generator, and operates automatically. A water purification system is included to furnish demineralized water for washing and rinsing tanks.

THE MPM spotlight

The Bubbelet Model A3P, by Kelvinator, is said to be ideal for offices, service stations, and reception rooms. Occupying only one square foot of floor space, it furnishes three gallons of cool drinking water per hour. Glacier Gray in color, the cabinet is said to harmonize with any decor, and has a hand-polished stainless steel top and "Dial-A-Drink" bubbler.

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Space metals—specified for vital areas of our rockets, missiles, and superspeed aircraft. Here is where exactness in manufacture counts for most —where know-how such as SUPERIOR's assures the utmost precision in strip steel grade, gauge, temper and finish. ● Whether your needs are up in the air or right down to earth, SUPERIOR can serve you dependably. Check with us!

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OF
COPPERWELD STEEL COMPANY
CARNEGIE, PENNSYLVANIA
For Export: Copperweld Steel International Company, New York

A continuous line for coating, embossing and decorating vinyl on metal

E. N. Sienko, manager, Special Products Division, holding partially-embossed stainless steel sheet to show contrast with unembossed portion.

new 400-foot line automatically turns out finished vinyl on metal sheet up to 62 inches wide

MPM EXCLUSIVE FEATURE

There are those in the mushrooming vinyl-on-metal industry who believe the best method of applying the material is by reverse roll coating. The chief advantages claimed for this method are a cost saving of about 30 per cent, more rapid production, and excellent adhesion between the plastic and the base metal.

Sun Steel Co., Chicago, employs the process of applying vinyl plastisol to metal by reverse roll coating. A new 400-foot automatic line will prepare the metal, apply the plastisol, cure it, and decorate and emboss the vinyl on metal. Coated sheets up to a maximum of 62 inches wide will be available on the new line. Production rates are expected to be stepped up to about 175 feet of coated stock per minute.

Two basic methods

The company's processes cover two different methods of making vinyl coated metal sheet. One method is the application of from .008 to .020 inches of vinyl plastisol on the metal and then, after it is cured, embossing the vinyl side of the sheet with an engraved steel roll to obtain the desired pattern. The other method is similar, except that the *metal and vinyl* are embossed to the desired pattern between a mated set of engraved steel rolls. This latter method utilizes approximately .001 to .004 inches of vinyl on metal. The purpose of embossing both the metal and the vinyl coating is to enable the use of a thinner gauge sheet of metal for cost reduction. Embossing the steel and the vinyl produces a laminate that is quite rigid for the gauge used.

There is no limitation of color and texture in the plastisol coating method used by Sun Steel. If a new texture is desired, a new set of steel rolls is designed especially for it. A combination of textures with overprinted patterns gives an unlimited variety of color, texture, and decoration to these vinyl coated sheets.

The metals that can be plastisol coated and embossed include cold rolled steel, electrogalvanized steel, aluminum, and magnesium.

Comparison of uncoated embossed metal and uncoated unembossed metal for cost, weight, and gauge

2 sheets with the same rigidity

20 gauge	1-½-lb. per sq. ft.	12c per sq. ft.
24 "	1 lb. per sq. ft.	11c " " "

The 24 gauge sheet weighs less, costs less, and is embossed on both sides of the sheet. In order to emboss the metal as well as the vinyl coating, it is necessary to apply approximately 1 mil of plastisol so as to keep the vinyl from flaking off. If it is applied any thicker than that, there is danger of peeling off. Therefore, the factor of coating thickness must be taken into account. An application may call for a thicker coating which would, of course, have greater over-all durability.

The new 400-foot, continuous coating

125 FEET OF COATED STOCK PER MINUTE

line will handle coils of metal up to 62 inches in width and up to 30,000 lbs. in weight. Coils will be mounted on an uncoiler and, by semi-automatic means, sent through a feeder and then, subsequently, a pinch roll. The start of the new coil is stapled to the coil ahead to maintain a continuous 24-hour operation. While the new coil is being fed through the pinch rolls and being stapled to the coil in the line, take-up is provided by a 75-foot loop car which is mounted in a pit below the start of the main line.

Metal preparation for steel and aluminum

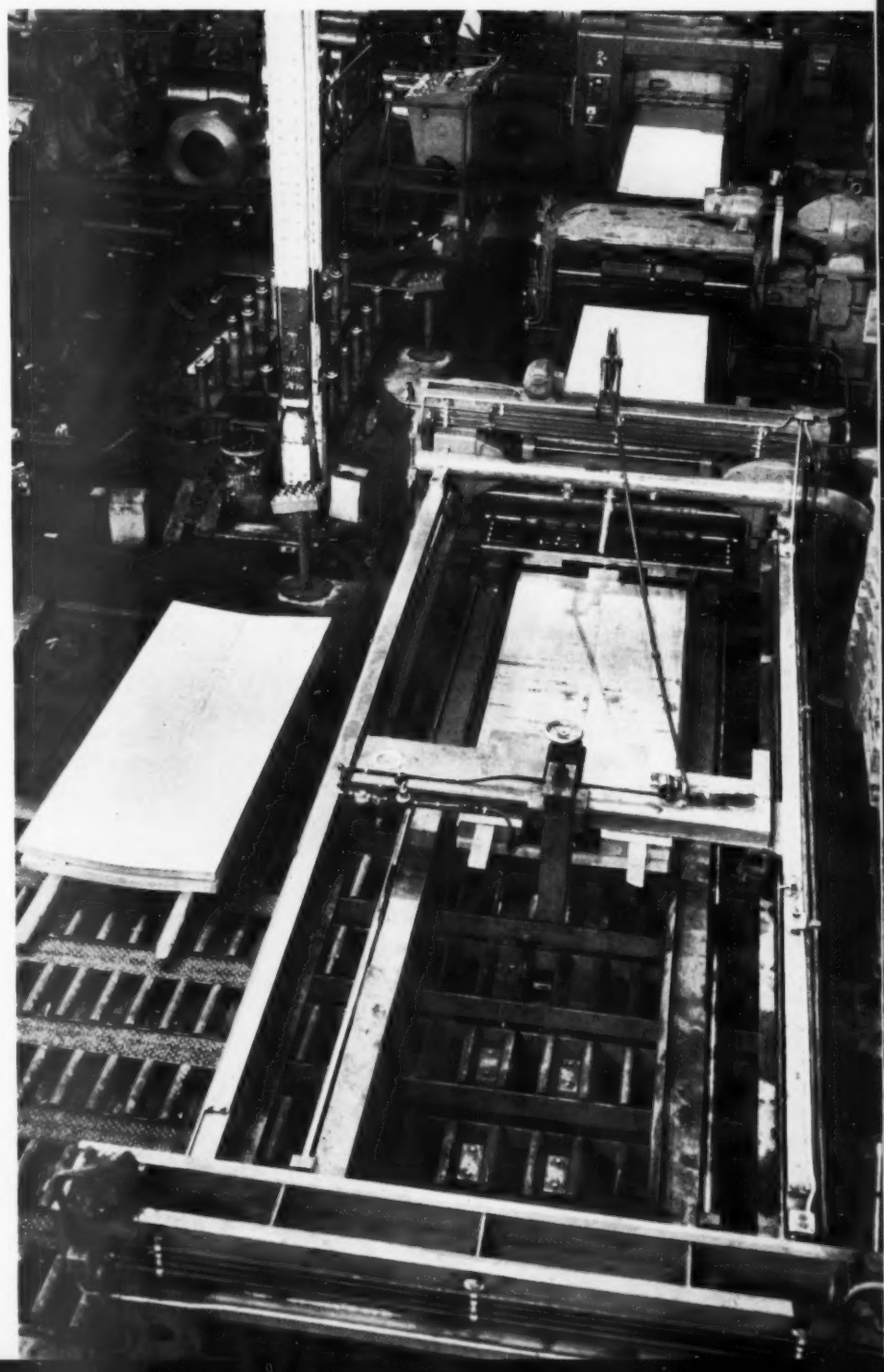
The first station in metal preparation is a 40-foot spray-applied cleaning solution that is directed at the sheet from above and below. As the sheet emerges from the cleaning chamber, it is sent through squeegee rolls that remove the last traces of moisture before it enters a ten-foot long chamber for hot water rinse. Squeegee rolls are provided between each cycle to prevent contamination. After the hot water rinse, it enters a zinc phosphate rinse and a 40-foot long chamber that is equipped with spray nozzles to apply the solution to the top and bottom sides of the sheet. When aluminum is being run through the line, this zinc phosphate tank is replaced with a chromate solution compounded especially for aluminum. A room temperature water rinse in a ten-foot long chamber follows the zinc phosphate or chromate, and then the sheet is sent through a chromic acid rinse in a 15-foot long chamber.

As the sheet leaves the chromic acid rinse cycle, it is sent through the last squeegee rolls and then enters a gas-fired convection dryer that measures eight feet in length. The sheet then is passing through the next phase of coating and enters a tracking unit which keeps the strip in a set path. This is necessary to keep it from wandering from side to side as it passes through a reverse roll coater that applies a protective coating on the reverse side and top side.

There is a series of three reverse roll coaters, the first of which applies the protective coating on the bottom side of the sheet and the prime thermo plastic coating of vinyl on the top side of the sheet. The other two sets of reverse roll coaters are used for coating the top side of the sheet with the final coating of plastisol. A primer coating of vinyl is necessary on all work. This 1-mil thick prime acts as an adhesive for the top coat. This coating must be applied not more than 1-mil in thickness. A 1-mil thickness is necessary for maximum bonding power between the metal and the final coat of vinyl.

If the sheet being processed is to have only one coat or only 1-mil thickness of vinyl coating applied, then it does not return from the oven to the plastisol coaters. These sheets are sent directly to the embossing line where both the metal and the coating are embossed between the mated sets of rolls.

The protective coating that is applied to the bottom side of the sheet can be pigmented, if desired by the customer, to match the vinyl coating of the top side. The vinyl material used for priming and the vinyl pastisol used for the final coat on sheets that are not em-



Automatic leveling line which blanks to plus-or-minus 1/64 inch, and produces stretcher leveled quality coated and uncoated steel and aluminum. Unit is equipped with automatic stacker.

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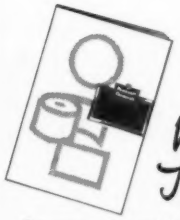

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METAL PROCESSING DEPARTMENT

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bossed on both sides are essentially the same. The only difference between these coatings is their thickness.

Two gas fired ovens

There are two ovens, one above the other, used for curing the prime coat and the final coats of plastisol. The oven located on top measures 80 feet in length, while the oven located directly below, used for curing the prime coat and the coating applied to the reverse side of the sheet, measures 60 feet in length. Similar temperatures are maintained in both ovens by one system of gas-fired convection air supply. The prime-coated sheet moves through the 60-foot oven at temperatures varying from 550-650° F. When the sheet emerges from the prime coating curing oven, it is sent back to the same station where the prime coat reverse rollers are located to be coated with the desired final plastisol coating on the top side of the sheet.

A coating of from .008 to .020 inches of liquid plastisol is applied to the upper side of the sheet by one of the two remaining sets of reverse roll coaters. As it leaves the reverse roll coater, the sheet enters the 80-foot fusing zone in the top oven. A temperature of between 550-650° F. is maintained through the entire length of the oven to cure the coating properly. The Btu input of this dual set of prime and finish coat curing ovens is 12,000,000 per hour. This Btu input is based on a 24-gauge steel sheet, 48 inches wide.

As the sheet leaves the oven, it is cooled with room temperature water in a ten-foot long chamber. It is then squeegeed and sent through any one of the three printing machines to apply the desired color of ink in the pattern compatible with the final embossed surface that the customer desires. It is possible to simultaneously apply patterns printed in various colors on each one or all of the three roll printing machines. Therefore, it is possible to have a sheet with three different, colored, decorated patterns over the plastisol coating.

The inks used in the overprinting decoration are especially compounded and formulated to be compatible with the vinyl chloride coatings. As the printed or decorated sheet leaves the machines, it is sent through a ten-foot long, electric infra-red pre-heat oven to bring the temperature of the vinyl to the proper level for embossing. The sheet is then sent through the embossing rolls, which impress the desired pattern. As the sheet leaves the embossing machine, it is sent through a 15-foot long chamber where a cooling spray of water is applied.

After receiving a final squeegee, the sheet passes through one of the "bridles" that are driven by a synchronous dc drive used for the entire metal preparation coating and embossing line. There is a second 75-foot loop car located above the end of the embossing line for take-up between the end of one order schedule and the beginning of the next. There are two coil cars on the end of the line to enable continuous coiling and handling of the finished stock.

Telephone booth made of coated and textured material.

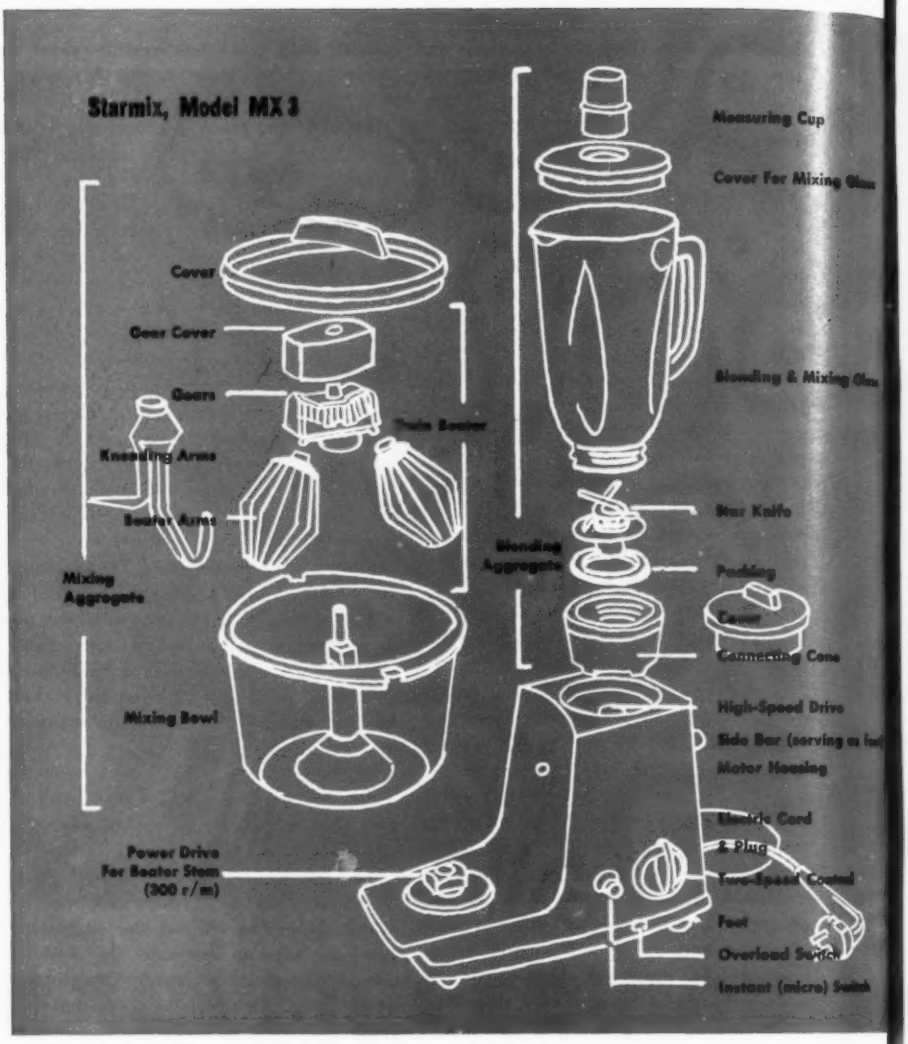
After the vinyl coated sheet is coiled up, it is either sent to the customer or sent through Sun Steel's new sheeting and leveling line. The vinyl coated stock can be supplied in stretcher leveled sheet in any desired size.

Textured and coated office partition.

Robert Kaplan, company vice president, holding vinyl coated amplifier cover.

AN MPM DESIGN FEATURE

Mixer-blender designed for clean appearance, versatility



(Bottom photos — from left)—First photo shows unit with attachment for slicing or shredding vegetables. Second photo demonstrates what ice cream maker would look like on unit. The accessory featured in the third photo is a juicer. The fourth photo shows the combination mixer and blender itself. The last photo (far right) shows the attachment for grinding. When the grinding attachment is used, the motor stand is turned on its side. The side then becomes the base.

unit features underdrive system for beaters, four attachments, and casing of die-cast aluminum

GOERTZ INDUSTRIAL DESIGN, INC., Munich, Germany, has built up an increasingly-fine reputation, both in Europe and in this country, for its application of modern styling to industrial products.

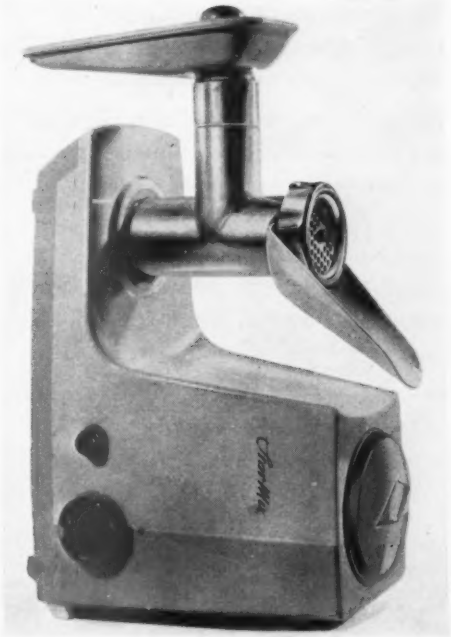
Thus, it came as no surprise when Electrostar G. M. B. H., Reichenbach-Fils, West Germany, enlisted Goertz to redesign its electric kitchen mixer. Electrostar wanted its new model, called "Star Mix," to have a clean appearance and technical versatility. The result was a streamlined, combination mixer blender, with various attachments, which was introduced at the Cologne Fair in February.

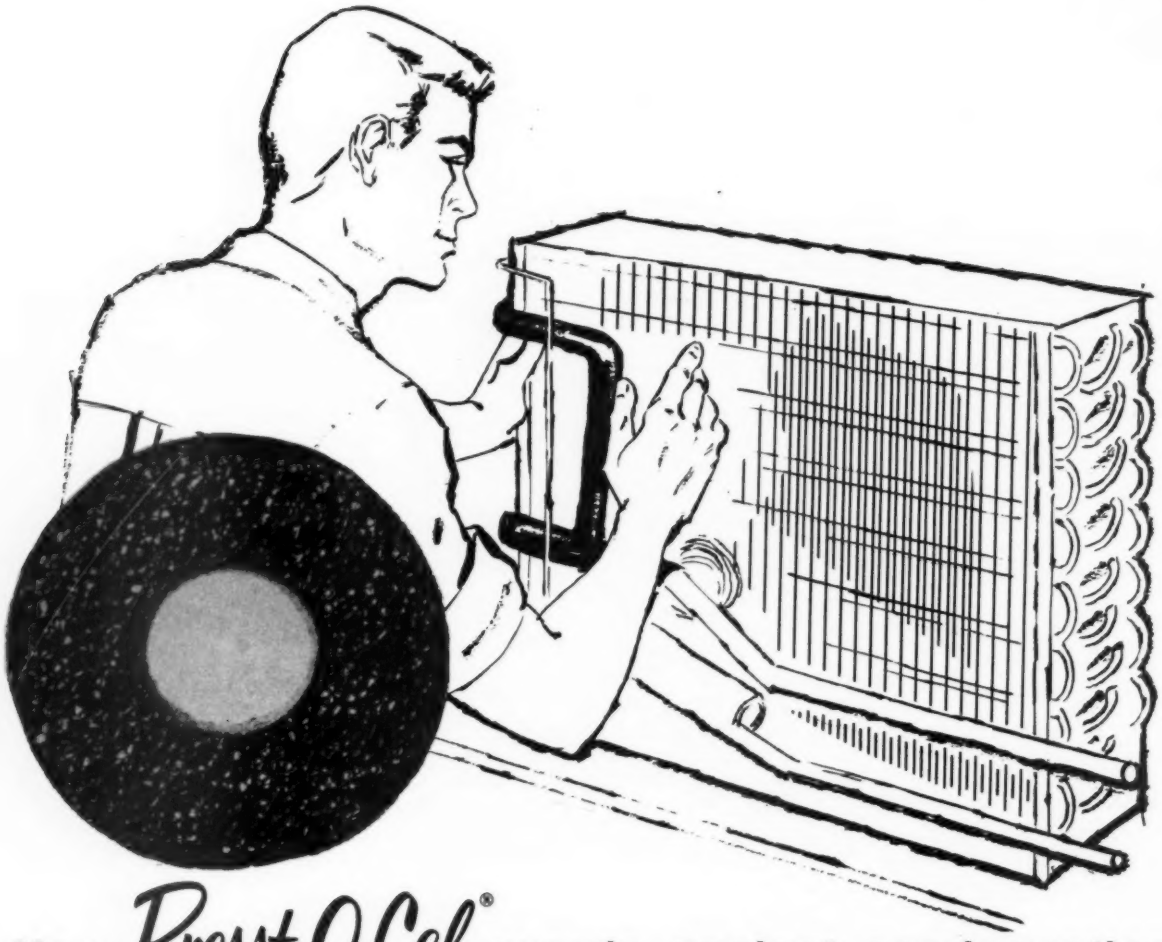
The basic machine consists of the mixer and the blender set in a casing of die-cast aluminum. The beaters are driven from the bottom, eliminating the customary overdrive, which usually protrudes almost to the center of the mixing bowl. This makes it easier to add ingredients during operation.

Both the mixing bowl and the blending glass are made of heat treated glass. The blending glass has a handle to facilitate pouring and will hold up to two quarts of liquid. The blending equipment also has interchangeable knives which can shave ice.

When the mixer or the other attachments are used, the blending glass is removed and a small lid placed over the exposed apparatus, giving a very compact appearance. In addition to the beaters, the mixer has a kneading arm. The mixing bowl has a capacity of five pounds of dough; the blender up to two quarts of liquid. The blender operates at a speed of 16,500 rpm, while the speed of the mixer is 300 rpm.

A feature of the model is the ease in which various attachments can be used. The accessories include a shredder or slicer, a juicer, an ice cream maker, and a grinder. This is said to be the first time all of these functions have been incorporated in one model.





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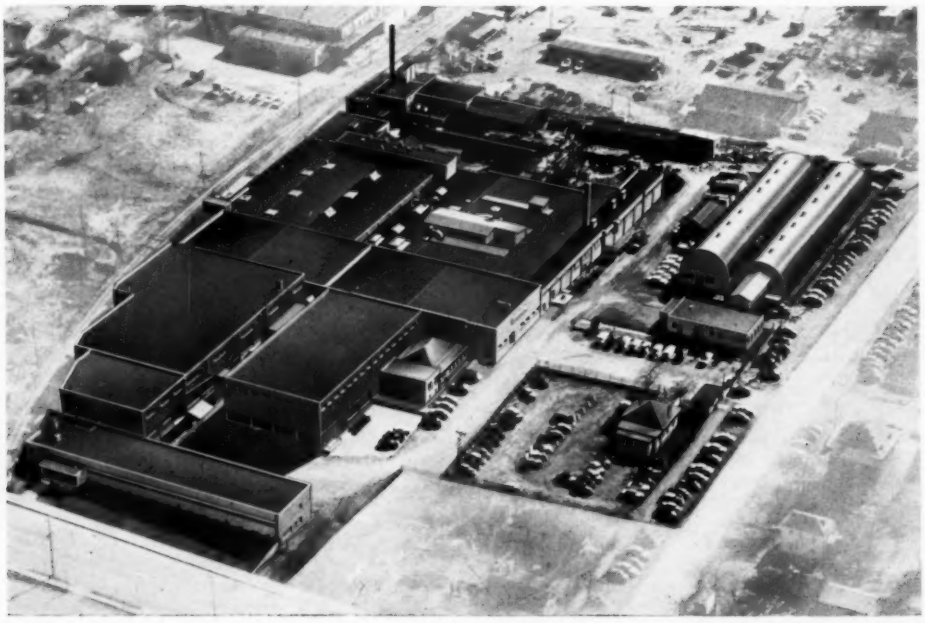
TEMCO,

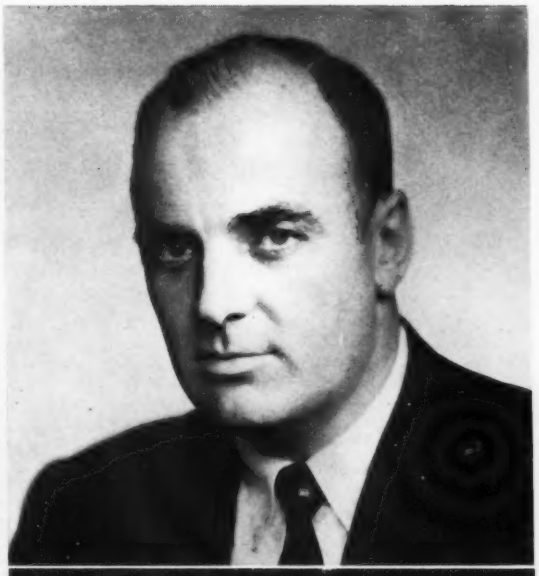
A Brief History

Temco, Inc. was organized in September, 1921. During the first few years, the company was engaged primarily in jobbing work, furnishing finished parts to local stove manufacturers. In 1932, company officials decided to build a finished product bearing the name TEMCO and began the manufacture of gas-fired space heaters. A few years later, gas-fired floor furnaces and wall furnaces were introduced to the trade, and more recently central heating equipment was added.

In October, 1958, the company purchased the Magic Chef line of gas and oil space heaters. During recent months, Temco has installed a facility to produce glass-lined water heater tanks. On April 1, 1959, a facility engaged in precision machine work dealing primarily with missile manufacturers was acquired.

Temco has a well organized staff of engineers and has performed many prime contracts for the United States Government, consisting mostly of items for ordnance. The company has also completed a number of research and development contracts for the Government. However, their principal production continues to be for domestic and commercial use.

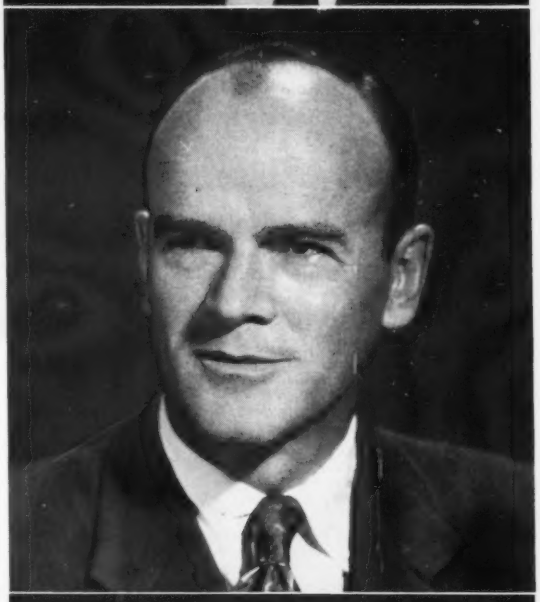




F. DONALD HART

F. Donald Hart, a native of New York City and a graduate of Cornell University, has been associated with Temco since 1944. Prior to that time, he was associated with the Du Pont Company for seven years. He joined Temco as an industrial engineer. In 1945 he was named vice president in charge of engineering, and four years later became executive vice president.

The Temco president is well known in the ordnance and gas heating and appliance fields. He is president of the Middle Tennessee Chapter of the American Ordnance Association. He has formerly served as president of the Institute of Appliance Manufacturers and as chairman of the Gas Appliance Manufacturers Association's marketing committee. He is a member of the Ordnance Bomb Integration Committee of the American Ordnance Association.



ROBERT N. SMITH

Robt. N. Smith joined Temco, Inc. in 1931 after five years in public accounting. He held several positions with the company during the intervening years, and at present is first vice president and treasurer.

Smith has also been active in trade association work. He is currently president of the Porcelain Enamel Institute. He is also a director of a local bank. His hobby is golf, and scores in the low eighties.

C. F. BAUMAN

C. F. Bauman joined Temco, Inc. in 1929. After graduating from the University of Minnesota, he was employed by the Seeger Refrigerator Company, St. Paul, Minn. His first experience with Temco was in Industrial Engineering.

Bauman held several other positions, including that of purchasing agent, and for the past several years has been responsible for production. At present, he serves as vice president in charge of production.

versatility is the first requirement for equipment and personnel in this plant manufacturing heating equipment and accessories, doing finished product contract work, and offering job fabricating and finishing services

A visit to Temco of Nashville

MPM EXCLUSIVE FEATURE

Manufacturing operations at Temco, Inc., Nashville, Tenn., are complicated by the fact that a wide variety of finished products are produced for sale under the company's own trade names, finished products are produced under contract for other brand names and, in addition, the company offers fabricating and finishing services to other manufacturers.

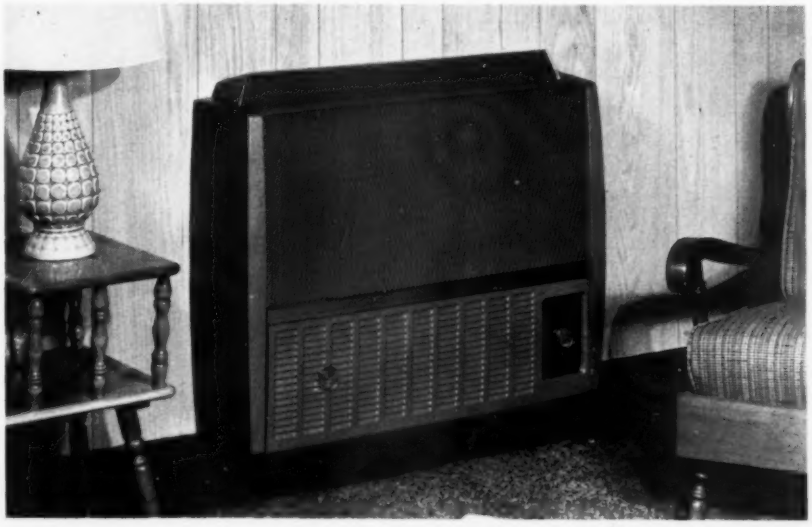
Temco's principal products include a complete line of circulating heaters, a combination of radiant and circulating room heaters, a line of floor furnaces, a line of wall furnaces, central heating plants, complete glass lined water heater tanks, and even a small butane-powered heater for ice fishermen. The company also manufactures many of the components used in these products. For instance, a complete line of blowers, which are used as accessories with the room heaters and wall furnaces, is produced. The component parts for the controls are purchased and assembled into complete units, including the thermostat, pressure regulator, and the safety pilot.

In the category of contract manufacturing, the company produces a complete structural unit and all enameled panels for gas ranges. A complete line of Wonder Warm room heaters is produced also. In this case, the heaters are completely manufactured and assembled in the Temco plant.

In addition to the completed and semi-completed products produced on contract, there is also the fabricating and finishing jobbing work, including signs and other similar products. On some signs, a standard background is applied, and then a multicolor design is produced in four colors by screen process application and single fire enameling. In this division, the range of work runs from these multicolor signs to fabricating parts for missiles.

One of the outstanding points of interest to the plant visitor is the extremely-large number of die sets that are immediately available for the fabricating plant. Several hundred die sets are necessary at all times just for current production requirements, because of the variety of work produced. For instance, a single day's run may include the requirements for a room heater, a floor furnace, and a wall furnace, plus the requirements for contract and jobbing activities.

At the other end of the manufacturing facility, there are five separate assembly lines, two for wall heaters, one for Temco gas room heaters, one for floor furnaces, and a fifth, dual-purpose line for Wonder Warm heaters and central heating equipment.



In the fabrication plant, all components are sheared from flat stock. The steel used includes cold rolled, enameling iron, galvanized, and stainless. In addition, parts are produced from aluminized steel and aluminum.

Fabrication

There are five "big" presses, ranging from 400-ton down to 75-ton capacity. In addition, there are numerous small presses and a battery of power brakes.

The welding department includes about 25 welding machines, including spot welders and gun welders. Much of the work requires welding, inasmuch as the structures for the gas ranges are the built-up, structural type. The combustion chambers for the heating equipment are quite complicated, and require welding, as do practically all of the supplementary parts, even to the small grilles which are part of the fronts.

The fabrication and welding departments are equipped to process parts

Spot welding floor furnace jackets. The welding department includes twenty-five welding machines.

One of the welding operations in the Temco, Inc. plant at Nashville. This welding station is served by continuous overhead conveyors.

MPM PHOTO

Metal forming wall heater jackets on a 250-ton mechanical press. Other presses range to 400-ton capacity.

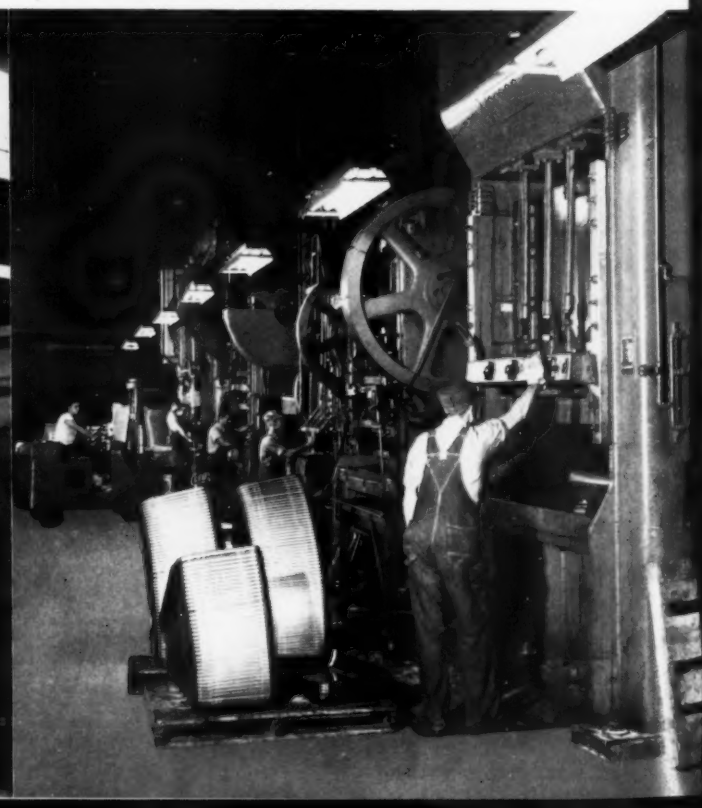
Stamping out discs for multi-color signs. When finished, these can be used as either single or double faced signs.

from sheets as light as 26 gauge up to 3/16″ plate. The various gauges processed, together with the numerous types of steel and aluminum used in this department, create a quite complicated material control problem. In some cases, process difficulties are amplified due to the fact that, in most cases, all types of materials are fabricated and welded on the same machines.

The combustion chamber or heat exchanger, which is required for all vented gas heating equipment, requires a quite flexible layout since there is very little similarity betwen the various products the company manufactures. Recently, a plan has been worked out where all combustion chambers are being manufactured in the same area on the same machines. It was functioning very well at the time this report was developed.

Press brake forming of metal parts. Shown in the foreground are wall heater combustion chamber parts.

A press line in the Temco fabricating department where literally hundreds of different die sets are in use regularly.



Planning in the porcelain enameling division is extremely important, and is keyed to the straight-through, gas-fired, muffle-type furnace, which is 90 feet in length and has a 32-foot burning chamber. This continuous furnace must serve the plant for its entire porcelain enameling production.

Porcelain Enameling

Production is planned and conveyor storage provided so that the furnace chain can be loaded to capacity at all times. Normal daily furnace production is 76000 square feet of finished ware.

Batch-type pickling

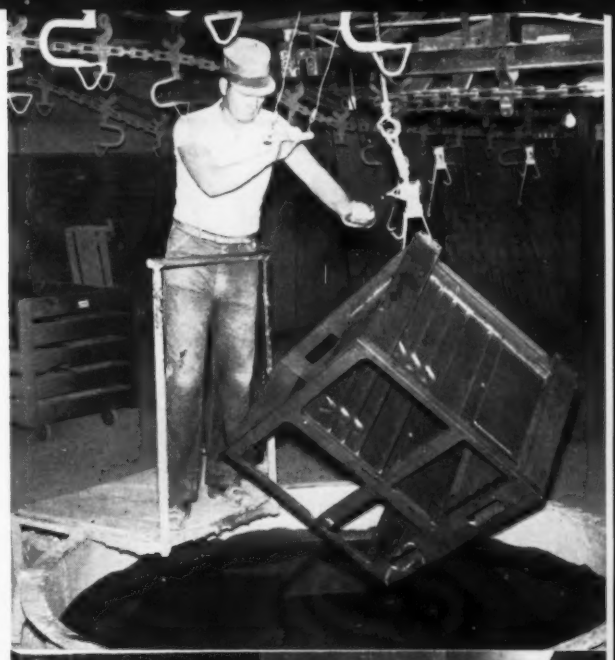
Pickling is, of necessity, a batch type, with overhead crane and large tanks, as the variety of work to be run makes it impractical to use a continuous pickling machine. Loaded baskets enter the pickle room direct from the fabricating section and feed out both to the dip line and to the spray line as may be required.

Each tank in the eight-tank setup has 2200 gallon capacity, arranged in the following order: (1) Alkali cleaner (6 to 8 ounces per gallon) which is kept at a rolling boil. (2) Overflow rinse at room temperature. (3) Cleaner (4 to 6 ounces per gallon). (The difference between the first and third tank is that the #1 tank is a strong cleaner that is comparatively hard to rinse, while the #3 tank holds a milder cleaner that is very easy to rinse.) (4) Hot rinse. (5) Sulphuric acid (6 to 7 per cent). (6) Overflow cold rinse. (7) Nickel tank (single nickel salts at one ounce per gallon), held at approximately 150-160° F. (8) Neutralizer.

A ninth tank in the series serves as a drier and is heated by forced air from a gas heater. All of the liquid tanks in the pickle room setup are heated by closed steam coils. Control requirements call for checking the solutions each morning.

Enamels used

A list of the various porcelain enamels used in regular production includes: (1) standard ground coat for spraying (blue ground coat), (2) dip-

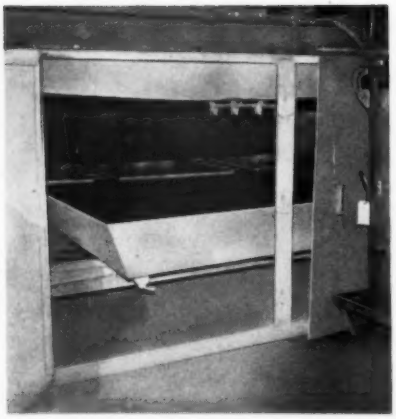


Complete inner structure for a gas range is dipped in ground coat in this circular, under-floor tank which holds 28000 lbs. of ground coat slip. The enamel is set up at 165 gravity and 3½ oz. on a 2-sq. ft. sheet.

Loading ground coated range top sections on the cable conveyor which carries them through the spray line and dryer.

MPM PHOTOS

Hand spraying ground coat reclaim enamel on reverse side of range side panels. Parts are then dated and turned on conveyor to continue through automatic spray machine. Note 120-gallon pressure tanks in background.



Section of an automatic spray machine (with doors open) which is used for spraying flat ware.

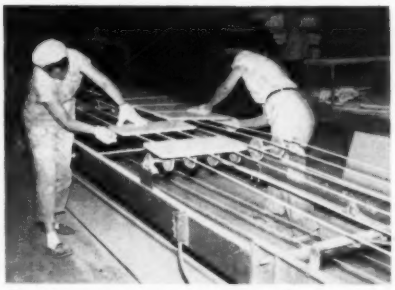
ping black, which is a ground coat with oxide added for both dipping and spraying, and (3) "Unit" ground coat, which is a Bureau of Standards A-19 type ground coat for high temperature resistance. The principal use for this enamel is on combustion chambers.

In the listing of finish coat enamels, the following cover coats go over standard ground coat: (1) Sign white, (2) special titanium type white, which is a hard finish used principally in sign work and one which will withstand multiple firing, (3) stainless white for stove part production, (4) special sign red, (5) special sign green, (6) Coppertone base, and (7) Coppertone overlay.

In addition, there are two heater finishes which do not require ground coat. These direct-on steel enamels are heater tan and sandalwood. The sandalwood finish has a "salt" effect which is gained by milling an acid resistant, titanium-type white cover coat with the colored enamel.

Formulas for the various enamels must be adjusted for each specific finish, because they are all fired at the same temperature. For example, fineness will vary from one half to eight grams on a 200-mesh screen, using a 100-gram sample. A control plate is fired from every mill of enamel, and checks are made for bond, texture, and color. On reclaimed plates (using reclaim enamel), plates are checked for these same factors plus the possibility of contamination. Because of the amount of enamel used for backing and special purposes, this plant finds it possible to use up to 100 per cent of the enamel reclaimed from original applications. In other words, the only normal loss is from floor scrapings and stack losses.

A 55-gallon drum is maintained for reclaiming each different type of enamel as it is applied. Then when sufficient material has accumulated, a 1500-lb. mill is set up with clay, bentonite, and nitrite (this is on a white finish), and the material is then milled for about one half hour to 45 minutes. The mill is overloaded so that there is actually very little grinding. It is just a case of good mixing. A great deal of the work on the heating equipment requires ground coat only, such as combustion chambers for the complete line. These combustion chambers are very complicated, fabricated parts, and must be dipped for complete coverage inside and out.



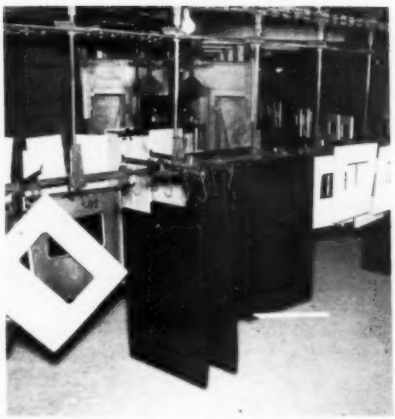
Brushing of range panels is done on the continuous cable conveyor.

EXCLUSIVE MPM PHOTOS

The complete structure for the gas range line gets standard ground coat for corrosion protection, as do all inside range parts (oven liner, etc.) One very interesting operation is the dipping of the complete range frames. This is done in a circular, under-the-floor tank holding 28,000 lbs. of liquid ground coat.

All of the structural components for the range frame are pickled separately and then sent to the welding department for assembly. The dipping tank immediately adjoins this assembly spot, so that an overhead air hoist can be used for one-man dipping. The welders, in cases where there is any metal finishing after welding assembly of the part, are required to wear clean gloves to prevent contamination of the parts following cleaning. The dipper then takes the structure from the conveyor, dips it and puts it on an outgoing conveyor which goes through a drier to a reinforcing spray booth, and then on to the furnace. Plant records show that these main frames are run through at a reject rate of one per cent.

Brushing edge of base of water heater flue so that subsequent welding to tank can be accomplished.



This typical load of ware entering and leaving the furnace shows intermingling of ground coat and cover coat.

The only white cover coat used is for range parts (exterior) plus some sign parts. A high percentage of the enamel used is colored cover coat. Cover coat is used on the unvented heater, including both the solid sections and the expanded metal grilles. This is an attractive medium-brown color with metallic effect resulting from the intermixing of white enamel as described earlier. This cover coat for heaters is all one coat, direct on steel.

All spray enamels are applied on automatic spray lines with laydown conveyors passing through the spray booths and then through gas driers located on the same conveyor. A continuous storage conveyor passes the continuous furnace chain and feeds fired ground coat to the cover coat spray. This is set up in such a manner that if parts are not taken from the conveyor, it serves as storage and feeds back later to the spray line.

Each storage tank has a number showing the type of enamel, specific gravity, wet weight, shift number, and other pertinent data.

Same firing temperature used for all products

All of the various finishes are fired at the same furnace temperature of approximately 1500° F. The chain speed is varied from five feet to 16 feet per minute, depending on the frit formula in use. For example, the 16 foot speed

would be for refiring of screen work on signs, while the slowest speed of five feet per minute would be for glass lined hot water tanks. The average chain speed on heater production and stove parts is about nine and three fourths feet per minute.

The furnace is operated 24 hours per day, five days a week, on a three-shift basis. It is even operated through the lunch period. The temperature is *not* dropped to idling over the week end. Operations are concluded at 7 A.M. on Saturday morning, and start in again at 7 o'clock on Monday morning. Furnace heat is maintained during this period.

Control of finished thickness is closely maintained by each production foreman (ground coat and cover coat foreman) and is recorded on a production control sheet. Checks are made with a magnetic thickness gauge on the fired ware about once each hour. Average thickness for ground coat is three and one fourth to four mils application, and for cover coat over ground coat six to six and one half (total) for one cover coat application.

MPM editors thank Kenneth Walker for this tip to porcelain enamelers.

IN LINE WITH THEIR PROGRAM for developing faster and better methods in the enamel shop, the enamel hospital was one of Temco's chief projects. Mounted porcelain points and rubbing stones were previously used. This meant grinding the part with a mounted point and hand stoning until the piece was satisfactorily repaired. This was a slow method of getting the quality aimed for.

Several months of experimenting with different types of grinders and discs resulted in the use of a small air grinder with a five-inch paper, 50-grit, silicone carbide disc. This grinder can be easily handled with one hand if desired, allowing the operator to hold down a small, hard-to-handle part with the other. Mounted points and hand rubbing stones have been eliminated, and with this grinder, feathering out of the defective spot is much easier. It grinds the metal as well as the enamel. Enamel plant supervision reports that there has never been any contamination of the enameled part from grit or metal grindings.

Through the use of these discs, the operational costs have been cut in half. With the use of a flexible backup plate of Temco design, the complete surface of a disc is used. About five discs per man per day are used, at a cost of four and one-half cents each. Scrap loss is low, and overtime in this department has been eliminated.

Repair work on parts fired in ground coat is done with this high speed air operated tool.

Painting and Assembly

One of two parallel spray booths in paint finishing layout. All parts are hand sprayed on the overhead conveyor.

As many as eight different colors may be run in a single day. Each color has a pressure tank setup for quick connect and immediate use.

Organic finishes are used extensively on exterior parts for the Temco heater line, and all paint finishes are applied in a very compact finishing setup which is built in the form of an L. The cleaning and phosphatizing equipment forms the vertical of the L, and the spray booths the base or horizontal section of the L.

The oven is suspended from the ceiling, so that the entire paint department takes up a space of only about 20 feet by 100 feet.

The cleaning and phosphatizing setup is a three-stage operation. The first tank is a combination alkali cleaner and phosphate solution; the second tank is cold water rinse (overflow); and the third tank is a chromic acid rinse. This is followed, of course, by a drier, and the parts feed direct into the spray booths.

Everything on the conveyor is hand sprayed. As many as eight different colors may be run in a single day. Each color has a pressure tank setup for immediate use, so that all the sprayer has to do is make a quick disconnect and connect after cleaning out the line and gun.

In addition to the fourteen pressure tanks carrying different finishes for immediate changeover in use, there are three dip tanks, two for gray and one for brown dip coatings. One of the gray tanks is for dipping burners with a very thin, rust-resistant application, and the other for dipping blowers, which call for a heavier finish coat.

Following are different types of paint which are used in this setup: (1) wrinkle paint, (2) metallic paint, (3) baked enamel, (4) heat resisting paint, and (5) aluminum paint. The metallic paints run in as many as three or four different colors. The oven temperature is set for 350° F. for all finishes. The continuous conveyor feeds direct from the spray booths (two) to the overhead oven. In order to get varying bakes on the different finishes, the temperature is maintained at 350° F. and the time varied as required.

A service conveyor feeds the assembly lines and picks up from both the enameling department and the paint department, so that all major parts that are finished pass by each of the main assembly lines. This conveyor serves as storage as well as assembly feed conveyor. It is 2300 feet long and is laid out to "dip" at appropriate feed stations.

As indicated earlier, there are five distinct assembly lines, including two for wall heaters, one for Temco gas heaters, one for floor furnaces, and a fifth dual-purpose line for Wonder-Warm heaters and central heating furnaces.

Sub-assemblies, such as blowers and

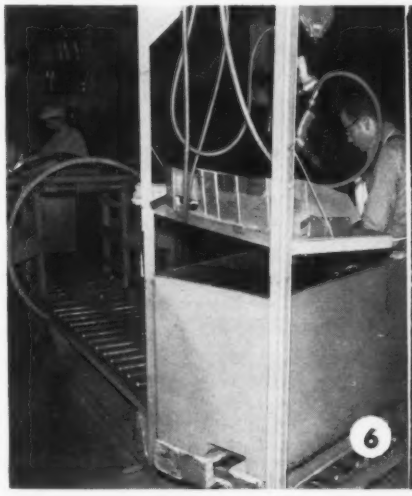
Sub-assembly operation on gas controls for gas heaters.

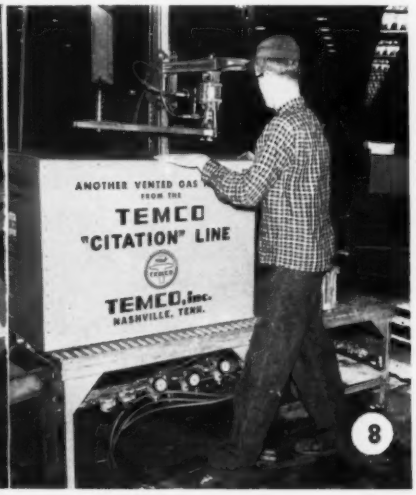
PHOTO

1. *Installing thermostat on the blower assembly housing.*
2. *This operator is completing the blower housing assembly after motor and squirrel cage fan have been installed.*
3. *Assembly operation on the slat-type power conveyor shows the addition of the complete burner and control unit to the combustion chamber for a typical heater.*
4. *Using power screwdriver to attach the wooden skid which will support the heater cabinet on the assembly line and form a part of the shipping container.*
5. *Final inspection of completed heater as it nears the end of the assembly conveyor. Heaters get 100-per cent inspection for complete conformity to specifications.*
6. *Operator is installing the combustion chamber in a floor furnace, adding the controls, and installing a galvanized baffle to complete the circumference of the interior.*
7. *One of the "turn over" units employed on the assembly and packaging lines at Temco to simplify inverting units during these operations.*
8. *Stapling machine for closing containers on the vented gas heater assembly line. This machine is designed to staple top and bottom without turnover. A single foot pedal operates the compressed air unit.*

MPM PHOTOS

control units, are prepared at separate assembly stations and are loaded onto special racks with self-contained rollers for transporting to the proper point on the final assembly lines. All assembly lines are either powered roller conveyors or gravity roller conveyors. The use of these is determined by the type of product and the amount of production on the unit. Each of the assembly lines feeds to a large "platform" gravity roller conveyor which, in turn, feeds to a belt conveyor for carrying the packaged products to either first or second floor storage. For any products to be shipped immediately, the lower floor belt takes over. Products for domestic shipment are packaged in corrugated containers at the end of each assembly line. The latest high speed tools and equipment are used.





1 *This view of assembly line for floor furnaces shows the service conveyor at two different levels.*

2 *Assembly line for new Citation vented gas space heaters. This is one of five finished product assembly lines.*

3 *Portable roller conveyor sections are used in some sections of warehouse to simplify handling.*

1 **2**

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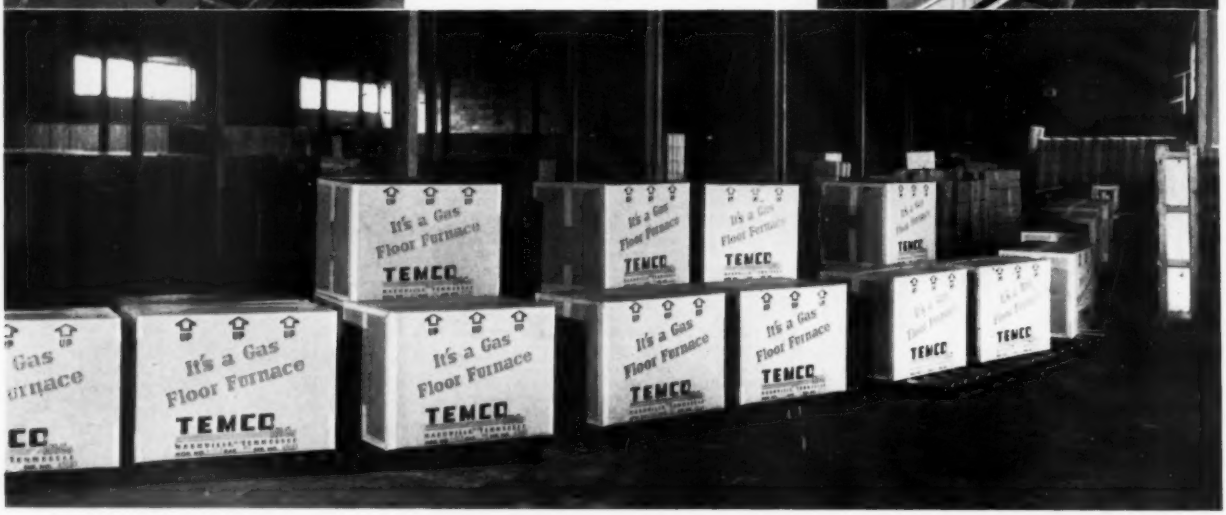
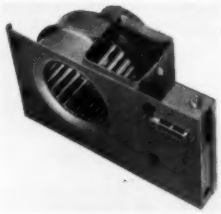
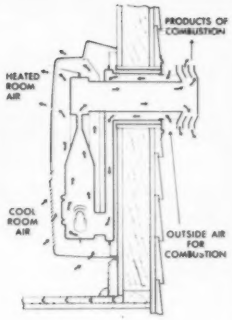
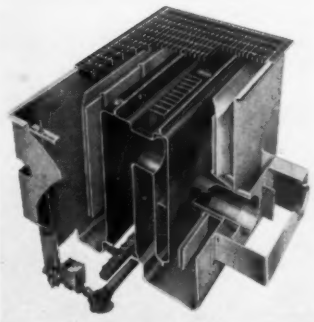


Components—Features







Blower attachment may be added to the wall heater inside cabinet with only four screws. The blower is completely wired, and delivers 200 cfm downward to floor.

Using the "snorkle" principle, the heater, through a tube-within-a-tube, draws in outside air for combustion, and exhausts the products of combustion to the outside.

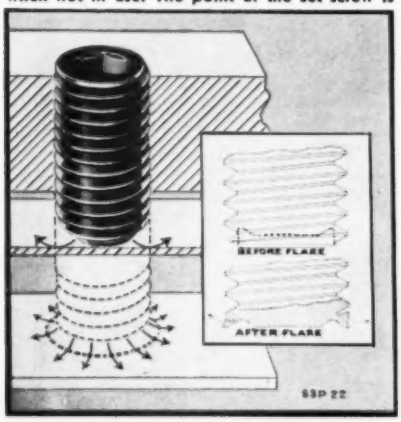
Floor furnaces, regardless of Btu rating, are 25½ inches deep, and do away with the need for a basement. The furnaces operate on Natural, LP, or Manufactured gases.

NEW

SUPPLIES & EQUIPMENT

Flare-Type Screw

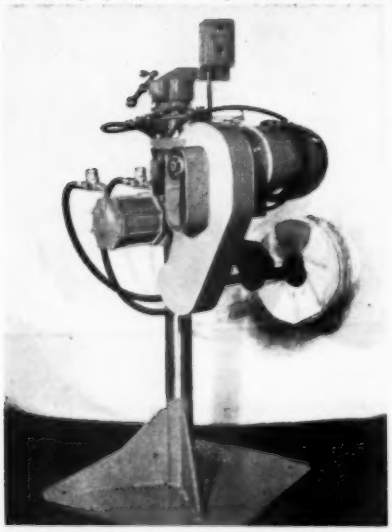
A flare-type screw is said to have overcome the problem of loosening from the mounting when not in use. The point of the set screw is



formed to flare out when it is tightened against the bearing surface. Once flared, the screw becomes a tightening or adjusting screw. The screw may be removed without damaging the mating thread. It is available in hex, slabbed, or slotted threads. For further information, contact Dept. MPM, Set Screw & Mfg. Co., Bartlett, Ill.

Adjustable Spindle Stand

An improved, adjustable spindle stand, incorporating automatic oscillation, has been announced. A heavy duty air cylinder with electrically-operated valves provides the oscilla-



tion to eliminate streaks or patterns. The unit can be used with brush backed heads, buffs, wire brush, or other types of polishing wheels. It has a vertical, as well as a 360°, rotating adjustment, plus a variable-speed range from 600 to 1800 rpm. For further information, contact Dept. MPM, Grinding & Polishing Machinery Corp., 2530 Winthrop Ave., Indianapolis 5, Ind.

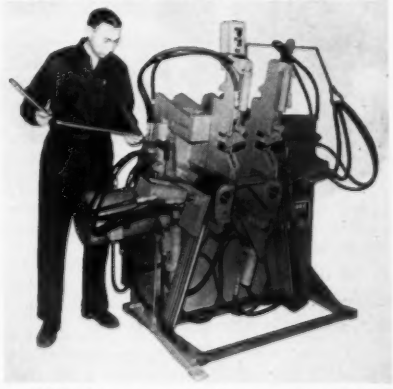
Combination Goggle-Respirator

A one-piece, combination goggle and respirator molded from flexible rubber has been introduced. An internally-molded ridge separates the goggle action from the respirator section. Ventilation is provided by grommet-type openings which are covered with a fine, stainless steel mesh screening. The screening is designed

to shunt liquids and dust from the eye area. The respirator section features a twin cartridge combination with 13 sets of cartridges and filters available for different hazards. For further information, contact Dept. MPM, American Optical Co., Southbridge, Mass.

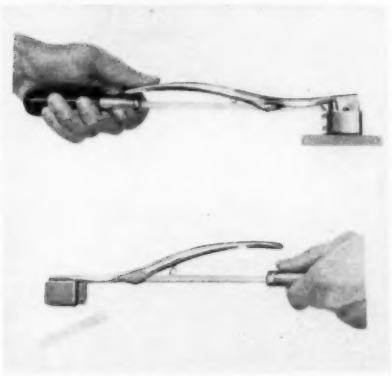
Tube Bending Machine

Equipped with a fully automatic loading and unloading mechanism, this tube bending machine forms two 90° bends in six tubes simultaneously, completing 3600 parts, of two "U" bends each, every hour. According to the manufacturer, this is three times the rate of single or multiple-type tube bending machines previously



available. It can accommodate a variety of tube sizes and be set for different bend radii. Desired spacing between bends is accomplished by sliding the two bending heads in either horizontal direction along the machined ways. For further information, contact Dept. MPM, Leonard Precision Products, Inc., 9200 Bolsa Ave., Santa Ana, Calif.

Safety-Feeder Tool



A low-cost, self-releasing, magnetic safety-feeder tool has been introduced. Features of this tool include one-hand operation, magnet that lifts and releases up to ten pounds, and chrome finish. Overall length of the tool is 14 inches. For further information, contact Dept. MPM, Ullman Devices Corp., Ridgefield, Conn.

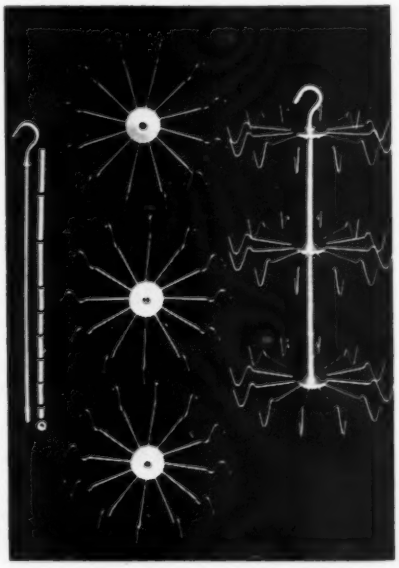
Circular Spray Nozzle

An extra-wide angle, circular-spray nozzle for spraying or washing the inside of tubular units has been announced. It is made in two styles to provide either a 180° flat, circular spray pattern or a 160° hollow-cone spray pattern. Capacities range from .75 to 10 gallons per minute at 40 pounds per square inch of pressure.

The nozzle is available in stainless steel, brass, or special materials. For further information, contact Dept. MPM, Wm. Steinen Mfg. Co., 43 Bruen St., Newark, N.J.

Multiple-Hook Tree

A flexible multiple-hook tree for production line painting of parts provides a variety of combinations. It consists of spiders with hooks and staff assemblies. The spider is made of a special cast alloy with high carbon steel. The wire hooks each have a holding capacity of three pounds. Staff assemblies are made in 12, 18, 24, and 30 inch lengths with ½, 1, and 2 inch spacers to permit variable spacings of the spiders on the staff. For further information, contact Dept. MPM, W. E. Pipkorn Mfg. Co., 2211 W. County Road "D", St. Paul 12, Minn.



30 HP Chop-Saw

Development of a more powerful all-purpose, high speed, metal chopsaw has been revealed. The saw offers 30-hp friction or abrasive cutting and can be used with a grinding wheel. A new suspension system permits fingertip feed without springs, counterweights, or adjustments.

The chop-saw has wide application in the metalworking field for both production and maintenance work. Straight or oscillating feed can be had at the option of the operator. For further information, contact Dept. MPM, Ty-Sa-Man Machine Co., 1095 White Ave., Knoxville 1, Tenn.

Electronic Air Cleaner

This portable, "room-size" electronic air cleaner has a built-in, two-speed, motorized fan, requires no water or drain connection, and can easily be moved from room to room. Its air handling capacity is 225 cubic feet of air

per minute at 90 per cent efficiency, as determined by the National Bureau of Standards Dust Spot Test. For further information, contact Dept. MPM, Electro-air Cleaner Co., Inc., Olivia & Sproul Sts., McKees Rocks, Pa.

Multi-Purpose Expansion Nut

An expansion nut has been designed for multi-purpose fastening applications where tapped holes are needed in thin sheet metal assemblies, commonly used in the appliance and allied fields. The expansion nut is available in six standard thread sizes, from 1/4-20 to 3/8-24, and can be used with either hand or in-production fastening operations. Special sizes are also available. For further information, contact Dept. MPM, The McLaughlin Co., 212 Jaikins Bldg., Birmingham, Mich.

Industrial Vacuum Cleaner

Announcement has been made of an industrial-type vacuum cleaner that operates off any compressed air source. Weighing 29 pounds, the unit creates a suction for wet or dry pickup and cleaning. Ball bearing caster wheels enable the cleaner to be transported with ease. The unit has a three-gallon capacity tank which serves as the refuse receptacle. For further information, contact Dept. MPM, Laukhuff-Pratt Mfg. Co., 3907 W. Mill Rd., Milwaukee, Wis.

Air-Powered Pumps

A line of air-powered pumps which develop liquid pressures up to 50,000 psig at temperatures up to 500° F. has been announced. These pumps are duplex in design, one piston providing suction, while the other piston delivers a high-pressure fluid. For a complete description of the pumps, write to Dept. MPM, American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.

Aluminum Grating

A lightweight, high-strength, extruded aluminum grating, featuring a snap-lock method of field assembly which eliminates the need for welding, has been announced. The grating is available in 1, 1¼, and 1½ inch thicknesses, in 6-inch extrusions, and in any specified length. For further information, contact Dept. MPM, Read Standard Div., Capitol Products Corp., York, Pa.

Electric Vibrator

An electric vibrator features a vise-lock mounting with a 2½" jaw opening for quick attachment. A U-shaped head with a serrated steel plate clamps equally well on iron or steel structures. Weight is 39 pounds; operation is at 3-phase, 60 cycle current from 110 to 550 volts. For further information, contact Dept. MPM, Cleveland Vibrator Corp., Cleveland, Ohio.

36-Inch Disc Sander

A 36-inch disc sander, forecast by the manufacturer to be of great use in the industrial field, is now being introduced. Features include safety of operation, low maintenance, pin-point pre-

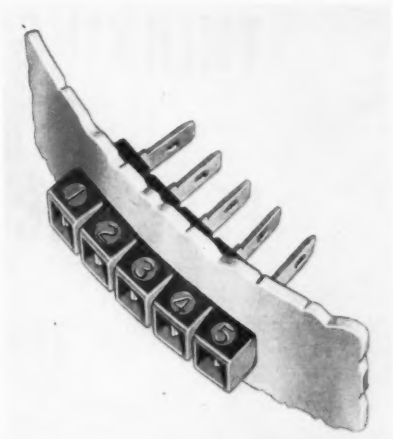
cision, maximum tilt, electric hydraulic table, easy disc removal, plus other tested improvements. The 36-inch disc area has a 12-inch clearance for hook-shaped jobs. For further information, contact Special Projects Editor, METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

Portable Safety Shield

A portable safety shield, especially designed for welding, grinding, and other metal manufacturing operations, has been introduced. The curtain of the shield wraps around the metal frame and is secured by heavy duty, rust proof snap fasteners. The frame is constructed of heavy, tubular steel. For further information, contact Dept. MPM, Singer Glove Mfg. Co., 860 W. Weed St., Chicago 22, Ill.

Accordian-Type Bushings

Accordian-type, junction-terminal bushings which snap into curved and flat surfaces have been introduced. The miniature bushings mate with 3/16" and 1/4" standard disconnect terminals.



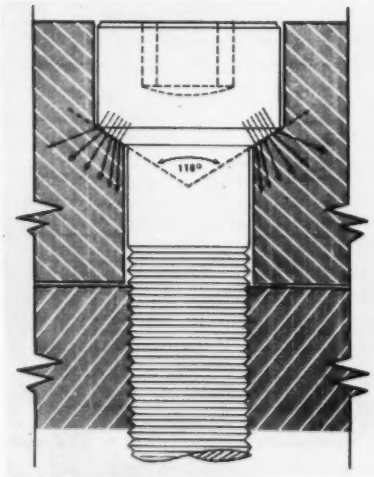
They are available as single or as flexibly-connected groups. When grouped, they are number coded. With use of the bushings, "pig tail" wire leads, screw terminals, and junction blocks are said to be eliminated. For further information, contact Dept. MPM, Heyman Mfg. Co., 1200 Michigan Ave., Kenilworth, N.J.

Explosion-Proof Control

A sensitive, explosion-proof differential pressure control is designed for use in areas where explosive gases or vapors are present, and where it is necessary to know the difference between two separate pressures or vacuums. Pressure settings are made by removing the cover and adjusting the hexhead adjustment screw. For further information, write to Dept. MPM, United Electric Controls Co., 85 School St., Watertown 72, Mass.

Tapered Cap Screw

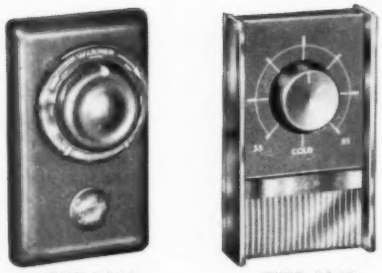
A socket head cap screw incorporates a taper, rather than a straight flange, in the head design. This taper is said to provide 17 per cent more bearing surface without an increase in head size, and 14 per cent less resultant compression be-



cause of the change in direction of stresses. The manufacturer claims that indenting, or corner fatigue, is eliminated, and a greater locking effect is achieved. For further information, contact Dept. MPM, Mac-it Parts Co., Lancaster, Pa.

THINKING OF ENTERING THE ELECTRIC HEAT FIELD?

Then you should know...



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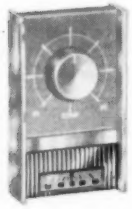

Easily attached thermometer now available at slight additional cost.

More than 50 electric heat equipment manufacturers put their brand names on White-Rodgers 'stats . . . using several times more than all other makes combined.

If your organization is considering electric heat, as a possible new product, we at White-Rodgers offer you the experience gained through leadership to assist you with any control problem you may encounter. Our technical staff is at your service . . . just write us.

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NEW INDUSTRIAL LITERATURE

High Frequency Brazing

High frequency induction brazing and soldering is described in a 12-page illustrated bulletin. The fifth issue of this "review" provides a comprehensive story dealing with alloys, fluxes, joint and coil design, production fixtures, and typical applications. For a copy of the publication, write to Dept. MPM, Lepel High Frequency Laboratories, Inc., 55th St. and 37th Ave., Woodside 77, N. Y.

O-Rings Booklet

A comprehensive booklet outlining the physical and mechanical considerations of O-ring selection is now offered. The booklet contains engineering data and reference tables for selection, installation, and maintenance of the O-rings. It is available on request from Dept. MPM, Auburn Mfg. Co., Middletown, Conn.

Coil Strapping Machine

A four-page illustrated folder gives information and specifications on a strapping machine for strapping slit coils. The machine has an indexing table and uniform strap tension. One man operates the machine, which is said to be flexible enough to handle a wide range of coil sizes. For a copy of the folder, write to Dept. MPM, Acme Steel Co., 135th St. & Perry Ave., Chicago 27, Ill.

Slow-Speed Gearmotor Chart

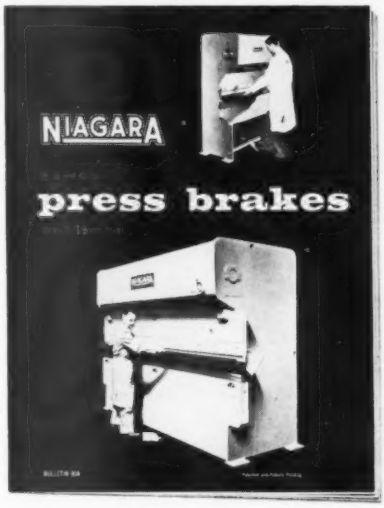
A technical data sheet on a low-cost, slow-speed gearmotor can now be had. Designed with low-noise helical gears that have sealed-in protection against dirt, the motor is said to be ideal for small appliances and other low-drive applications. Optional features include a brake, clutch, and fan. The literature is available on request from Dept. MPM, Brevel Products Corp., 601 W. 26th St., New York 1, N. Y.

Marking Devices

Automatic roll marker and manual marking devices for product marking and identifying requirements are pictured in catalog MA-59. Several models for automatic OD and radial end-face markings are shown along with manual flat and round face markers, hammers, and holders. To obtain a copy of the catalog, write to Dept. MPM, New Method Steel Stamps, Inc., 147 Jos. Campau, Detroit 7, Mich.

Redesigned Press Brakes

Bulletin 90 contains full information on a redesigned and expanded line of press brakes. Fully described are 15, 30, and 60-ton machines with illustrated explanations of component parts. Specifications are given for eight models with bed lengths ranging from 4 to 14 feet, and with mild steel bending capacities to 3/16". The bulletin may be had by writing to Dept. MPM, Niagara Machine & Tool Works, 683 Northland Ave., Buffalo 11, N.Y.



Variable-Speed Drives

A variable-speed drive bulletin contains suggested variable-speed applications plus detailed information regarding hp, speed variation, mounting styles, enclosures, and electrical characteristics. Illustrations show the basic types of drives and a variety of modifications, including a separate motor drive horizontal assembly, and a newly-designed, shaft-mounted, right-angle, variable-speed drive. Copies of the bulletin are available on request from Dept. MPM, Sterling Electric Motors, Inc., 5401 Telegraph Rd., Los Angeles 22, Calif.

Paint Removing Compounds

A five-page paper on paint removing compounds is now available to the finishing field. Included in the comprehensive report is a chart for correct stripper selection. The paper describes the general types of paint strippers, recommendations for their use, and case history information from the appliance and metal products industry. To obtain a free copy of the paper, write to Dept. MPM, L. R. Kerns Co., 2659 E. 95th St., Chicago, Ill.

Contact Wheels Catalog

Data on the selection and application of contact wheels and industrial rolls for coated abrasive grinding and finishing is offered in a 16-page catalog. Advantages claimed for the rubber contact wheels are longer belt life, higher production, greater safety, and lower wheel costs. A handy chart helps select the proper hardness and face rubber contact wheel for recommended uses. The catalog may be obtained by writing to Dept. MPM, Chicago Rubber Co., Inc., 651 Market St., Waukegan, Ill.

Aluminum Tooling Plate

Properties, specifications, and availability of wrought aluminum tooling plate are described in a recent brochure. The tooling plate is said to be applicable where maximum stability, flatness, workability, and ease of handling are required. In addition, the product is claimed to be free from porosity and brittleness. For a copy of the brochure, write to Dept. MPM, Reynolds Metals Co., Box 2346, Richmond 18, Va.

Bulk Packing Chart

A bulk packing chart is now being distributed which gives complete information on a packing and palletization system. The system was designed to fit into modern methods of material movement for large or small users of bulk screws. Where screws are moved in small quantities, a 9 inch x 9 inch x 6½ inch carton is used that weighs about 45 pounds when fully packed. For large quantities, a disposable two-way entry pallet on which 36 of the cartons are steel strapped is provided free of charge. To obtain the chart, write to Dept. MPM, Southern Screw Co., P. O. Box 1360, Statesville, N.C.

Wire Stitching Machine

A bulletin recently issued describes a wire stitching machine which forms and installs retainer rings on electronic

controls, motor shafts, and other applications in a single operation. The machine carries a ten-pound roll of wire, sufficient to form up to 20,000 retainer rings without reloading. Use of the stitcher is said to eliminate separate forming and press installation operations, as well as handling between operations. Complete information on applications, as well as a copy of the bulletin, may be obtained by writing Dept. MPM, Ideal Stitcher Co., 2323 N. Knox Ave., Chicago 39, Ill.

List Prices On Screws, Bolts

This colorful catalog contains eight pages of list prices on packaged wood screws, type A tapping screws, machine screws, machine screw nuts, stove bolts, and carriage bolts. It eliminates the necessity of thumbing through an "all-inclusive" catalogue to find the packaged items. The front cover of the catalog is indexed. To obtain a copy, write to Dept. MPM, Southern Screw Co., P.O. Box 1360, Statesville, N.C.

Drawn Metal Shells

An informative series of bulletins depicting and explaining the drawn metal shell production is now offered. Of particular interest to manufacturers of appliances, electronics, and general metal goods, the bulletins include information on specific parts and quality control procedures. Free copies of the literature are available from Dept. MPM, Cly-Del Mfg. Co., 591-3 Sharon Rd., Waterbury, Conn.

New Plant Brochure

An eight-page, full-color brochure on new plant facilities for cold finishing of stainless steel strip has been made available. The brochure highlights the modern production equipment installed in the plant, such as the four-high reversing mill and a 600-foot long annealing and pickling line. Copies of the brochure are available by writing Dept. MPM, Universal-Cyclops Steel Corp., Bridgeville, Pa.

High Temperature Crucibles

Brochure KTM-9 presents detailed information on crucibles made of tungsten and molybdenum that are designed for use where a high melting point metallic container is required. A chart of available sizes gives all necessary dimensions, and typical crucibles are illustrated. Properties of this high density metal are described. Copies of the brochure may be had by writing to Dept. MPM, Kulite Tungsten Co., 1040 Hoyt Ave., Ridgefield, N.J.

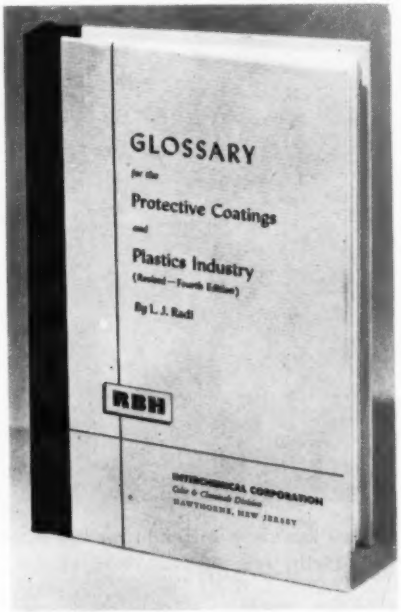
Automatic Stitcher And Shear

An automatic stitcher and an automatic shear that are said to increase the output of continuous processing lines are described in a 4-page, illustrated brochure. The stitcher joins two pieces together with 14 locked stitches set in two parallel rows, two inches apart, in from 15 to 20 seconds.

The twin-cut shear is air operated, and requires .07 cubic feet of air at 80 psi for the cutting stroke and return. For a copy of the brochure, write Dept. MPM, Herr Equipment Corp., 1201 Vine St., Warren, Ohio.

Protective Coatings Glossary

The fourth edition of the "Glossary for the Protective Coatings and Plastics Industry," by L. J. Radi, is now available. This pocket-sized edition has 158 pages and contains 1,200 frequently-



used terms. The definitions are said to be accurate, brief, and clear. Single copies are $2.00, five or more copies are $1.50 per copy. Write to Dept. MPM, Interchemical Corp., Color & Chemicals Div., Hawthorne, N.J.

Ceramics Color Chart

Colors ranging from lemon yellow to mahogany brown are shown in a color chart now available from this basic oxide manufacturer. With these basic oxides, it is claimed that about any shade in the color spectrum is possible for porcelain enameling. Facts about mixing, milling, and firing are reviewed on the back of the color chart. To obtain a copy of the chart, write to Dept. MPM, Pemco Corp., 5601 Eastern Ave., Baltimore 24, Md.

Pressed Powdered Metal

"Converting Powdered Metal into Machine Parts" is the title of a 4-page folder describing 18 advantages for pressed powdered metal. The process is performed by automatic presses which force the proper powder into the die and press it into a compact molded piece. Close tolerances and excellent wear resistance are among the advantages claimed for this process. For a copy of the folder, write to Dept. MPM, Norwalk Powdered Metals, Inc., 8 Muller Park, Norwalk, Conn.

Speed Reducer Brochure

Publication of a four-page brochure detailing a line of self-cooling, fin and fan-equipped speed reducers has been announced. The folder contains information on three basic styles . . . two horizontal and one vertical unit. Two of the styles are available with "C" flanges for mounting. Each style is available in six sizes. To obtain a copy of the brochure, write to Dept. MPM, The Ohio Gear Co., 1333 E. 179th St., Cleveland 10, Ohio.

Revised Slitter Brochure

A revised 76-page brochure, entitled "Slitting Lines for Coils and Sheets," has been made available by this manufacturer of slitting equipment, roll forming machines, and tube mills. The two-part booklet contains information on design selection, and operation of slitters and slitting lines. It also includes detailed time studies, capacity tables, and other pertinent data. Copies may be obtained by writing Dept. MPM, The Yoder Co., 5500 Walworth Ave., Cleveland 2, Ohio.

Rhodium Electroplating

A 20-page, fully illustrated booklet tells when, where, and how to use rhodium electroplate to improve product performance in industrial applications. The booklet features graphs and charts showing rates of deposition under various operating conditions. A special chart which permits quick computation of rhodium electroplating costs is also included. For a free copy, write to Dept. MPM, Sel-Rex Corp., 75 River Rd., Nutley 10, N.J.

Photocopier Brochure

The two latest members of the Transcopy Photocopier line are described in a booklet just published. The illustrated brochure introduces the 9½-inch wide "Star" and the 15-inch wide "Mercury," which are designed for point-of-use

700 +37

adds up to trouble-free *Glass-Lined* water heaters

It is a well established fact that our No. 700 water heater enamel is truly a superior frit. Constant contact with the results obtained by our customers proved that we did have *the top* water heater enamel. But . . . we thought it could be improved and give our customers even greater assurance of trouble-free results.

Ing-Rich "Know How" NOW provides an even better Frit

Again, Ing-Rich "Know-How," the result of exhaustive laboratory research by our top flight ceramic engineers, working hand in hand with our practical technicians under actual production conditions, has proved its great value.

Now, our No. 700 water heater enamel, *plus* our new No. 37 gives you even greater assurance of trouble-free results. This superior, plant-tested frit provides:

1 Greater corrosion-resistance
2 Less Porosity
3 Higher percentage of one-coat applications
4 Wider range of firing temperatures
5 More workability
6 Much greater acid resistance

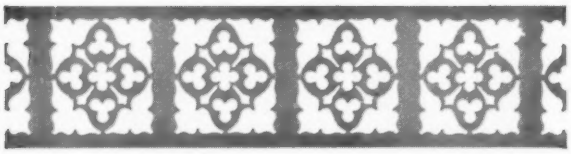
Ing-Rich plant-tested ceramic engineers and plant-tested Frit will give you the results you want and need. There is no substitute for "Know How."

Pioneer Producer of
LIFETIME
Porcelain Enamel Products

INGRAM-RICHARDSON, INC.

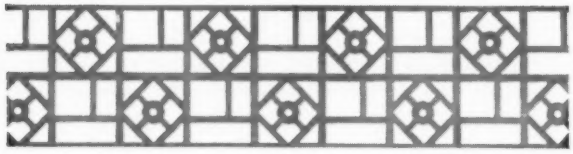
OFFICES, LABORATORY AND PLANT
FRANKFORT, INDIANA

ING-RICH
FRIT
"The Plant Tested Frit"



pick the pattern that

fits your plan—over



100 to choose from!

Your clients will appreciate the combination of function and decoration that Hendrick Architectural Grilles give you. They'll like the low cost of installing Hendrick Grilles — lower than for most architectural materials. And they'll like the sturdy quality of Hendrick Grilles, which always lie flat . . . never bend or warp . . . provide plenty of open space for passage of air.

You'll like the wide range of designs and dimensions . . . the varying numbers and sizes of perforations . . . that you can choose. **Many designs in the Hendrick Catalog, like this one, are available only from Hendrick.**

Write today for the free Hendrick catalog. It offers you over 100 grille designs to beautify *your* design.

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MANUFACTURING COMPANY

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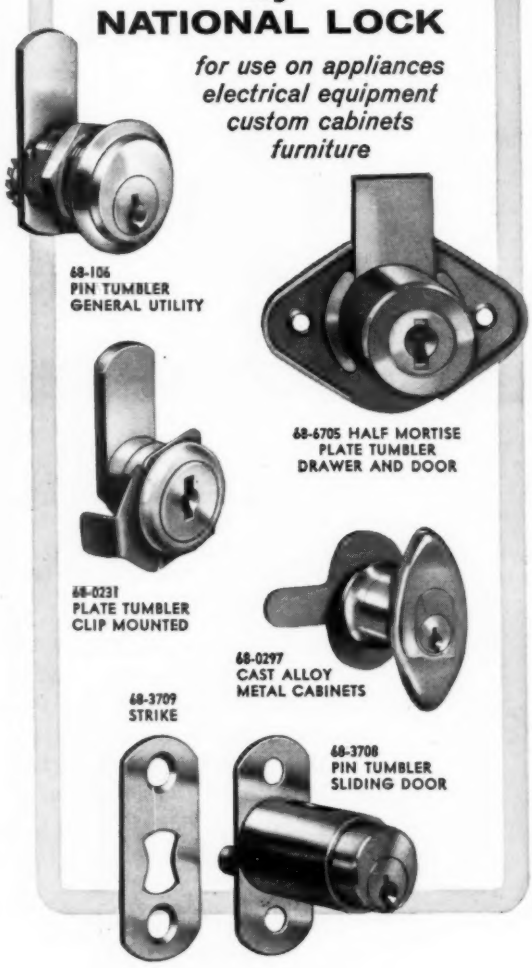
Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Hendrick Wedge Wire Screens • Architectural Grilles • Mitco Open Steel Flooring — Shur-Site Treads • Armorgrids • Hydro Dehazers • Distillation Column Internals.

LOCKS

by NATIONAL LOCK

for use on appliances electrical equipment custom cabinets furniture



Write for new Catalog No. 359 illustrating and describing the complete line of National pin tumbler, plate tumbler and lever tumbler drawer and door locks. Key and combination locks are soundly engineered and constructed of finest quality materials. Also special locks for your special needs.

NATIONAL LOCK COMPANY
ROCKFORD, ILLINOIS
Industrial Hardware Division

operation, even under bright lighting. These photocopiers are said to be the most economical in their field. Free lifetime service is offered with the models. To obtain a copy of the booklet, write to Dept. MPM, Remington Rand Div. Sperry Rand Corp., 315 Fourth Ave., New York 10, N.Y.

Bimetal Thermostats

Nineteen major types of bimetal thermostats for use in appliances, apparatus, and electronic applications are described in a recent bulletin. Printed in two colors, the bulletin gives condensed technical data, including operating ranges and ratings. Optional mountings, terminal arrangements, and overall dimensions are also covered. The back of the bulletin has a chart for quick conversion of the Centigrade and Fahrenheit temperature scales. For a copy of the bulletin, write to Dept. MPM, Stevens Mfg. Co., Inc., P.O. Box 1007, Mansfield, Ohio.

Roll Forming Machine

Model 150, a roll forming machine of the open-front type, is described in a bulletin available upon request. The machine has spur gear design, all-welded construction, and spindles mounted on anti-friction bearings. Roll diameters range from 2½ to 3½ inches. Horizontal c-c distance is five inches. To obtain the bulletin, write to Dept. MPM, Dahlstrom Machine Works, 4233 W. Belmont Ave., Chicago 41, Ill.

Aluminum Sheet Data

A free technical bulletin describing design for aluminum sheet is now available. This latest bulletin includes specifications on various aluminum alloys. For a copy of the bulletin, write to Dept. MPM, Fairmont Aluminum Co., Fairmont, W. Va.

Paint Spray Pumps

A free idea book on uses for paint spray pumps is offered by this manufacturer. The systems designed are said to result in reduced handling of paint, savings in time and labor, and improved plant upkeep. Write to Dept. MPM, Graco Sq., Minneapolis 13, Minn.

Architectural Grille Designs

Over 100 architectural grille designs are shown in a catalog offered free of charge. The grilles themselves are said to always lie flat, never bend or warp, and provide plently of open space for passage of air. To obtain the catalog, write Dept. MPM, Hendrick Mfg. Co., 79 Dundaff St., Carbondale, Pa.

Packaged Air Conditioners

Catalog No. 571, a four-page, two-color bulletin, describes a line of packaged air conditioners for commercial and industrial cooling installations. The self-contained units may be installed with or without duct work, may be air or water cooled, and come in sizes from three to 15 tons. Complete dimensions and specifications are given. For a copy of the bulletin, write to Dept. MPM, Acme Industries, Inc., 600 N. Mechanic St., Jackson, Mich.

Ideas For Piping

A booklet entitled " A World of New Uses for Pipe in Industry" contains information on the construction of industrial fixtures from ordinary pipe, by using a simple universal clamp. This pipe is said to have a very high strength-to-weight ratio, and is available in a wide range of sizes. Directions for assembling items are included in the booklet. For a free copy contact Dept. MPM, Tube-Strut Corp., 2960 Marsh St., Los Angeles 39, Calif.

Electroslag Welding Equipment

A four-page, illustrated bulletin on welding equipment for electroslag welding has just been issued. The bulletin describes the electroslag process, compares it with submerged arc welding, and describes the equipment. A table shows variables used on typical welds with different thicknesses of material. For a copy of the bulletin, write Dept. MPM, Arcos Corp., 1500 S. 50th St., Philadelphia, Pa.

Lead and Enamels

A booklet titled "Lead in the Ceramic Industries" shows the advantages of using lead compounds in finished products. Lead is claimed to lower an enamel's melting point, allowing it to be fused onto alumiunm or aluminized steel at temperatures low enough so that the aluminum remains stable. For a free copy of the booklet, write to Dept. MPM, Lead Industries Assn., 60 E. 42nd St., New York 17, N. Y.

V-Belt Pulleys

An illustrated circular describes welded pressed steel single groove, v-belt pulleys. Available in sizes from 2.4 inches to 12 inches, they are said to be lightweight, of sturdy construction, and economical. Each size is available in several bore sizes. The circular may be had by writing Dept. MPM, The Nagel-Chase Mfg. Co., 2817 N. Ashland Ave., Chicago 13, Ill.

Cleaning Compounds Brochure

Immersion, electrolytic, and spray cleaners, as well as acid addition agents, strippers and drawing compounds are described in a general brochure. Specific uses of the proper compound are given as well as short descriptions of a new group of phosphate coatings that are said to lock the organic finish to the basic metal. For a copy of the brochure, write to Dept. MPM, Northwest Chemical Co., 9310 Roselawn, Detroit 4, Mich.

Spray Coating Brochure

An airless spray coating brochure describes how this equipment sprays without spray booths or exhaust systems. A list of equipment users is included. For a copy of the brochure, write Dept. MPM, Nordson Corp., Amherst, Ohio.

Locks Catalog

Catalog No. 359 illustrates and describes a complete line of pin tumbler, plate tumbler, and lever tumbler drawer and door locks. These locks can be used for appliances, electrical equipment, and metal furniture. Special locks for specific needs are available. To obtain the catalog, write to Dept. MPM. National Lock Co., Rockford, Ill.

Controls Data

Complete data and quotations on a single-position infinite control, heat selector switches, toggle switches, a tubular heating element, and open coil heating elements is available from this manufacturer. These controls are designed for appliances and related products. To obtain the literature, write to Dept. MPM, Tuttle Electric Products, Inc., Kirkland, Ill.

Zinc-Coated Steel

A brochure describes the advantages and gives detailed information on zinc-coated steel. The continuous process used in making the steel is said to insure a uniformly-applied, corrosion-resistant zinc coating, and will not chip or flake. Write to Dept. MPM, Weirton Steel Co., Weirton, W. Va.

Packaging Booklets

Four idea booklets showing cost savings in packaging, handling, stacking, shipping, and bulk handling are now available. Titles of the booklets are, "What To Expect From Wirebounds," "Materials Handling, Warehousing and Stacking," Heavy Loads," and "Pallet Boxes." To obtain any or all of the booklets, write to Dept. MPM, Wirebound Box Mfrs. Assn., 222 W. Adams St., Chicago 6, Ill.

...WITH HOMMEL FRITS

PORCELAIN ENAMEL

FRITS

... won't scratch or mar even under constant exposure to cutting desert sands. You're sure of a truly lasting finish when you use Hommel frits. Hommel research means added strength . . . real protection against acids, alkalis, scratches, thermal shock, abrasion. Designed to endure.

Hommel research also means lower production costs in your plant. The most exacting quality-control checks in the industry are your guarantee of always uniform performance . . . no costly tie-ups. And with Hommel, you have a ready source of supply, no matter how large your needs.

There is a Hommel frit designed to fill your exact porcelain enameling needs . . . at either conventional firing temperatures or at greatly reduced temperatures, with XLT®. The Hommel representative near you will be glad to discuss your individual needs.

M.P.M.-8-59

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Our Technical Staff and Samples are available to you without obligation. Let us help with your problems.

World's Most Complete Ceramic Supplier

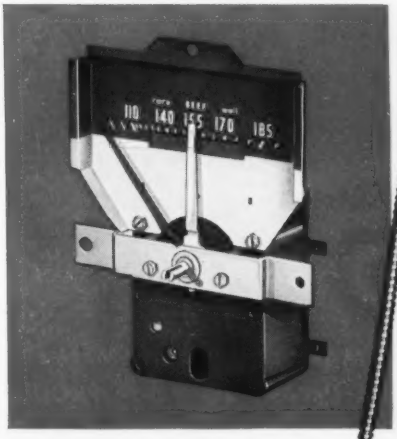
GUESTS LATE? ROAST RUINED?

Never Again!

New

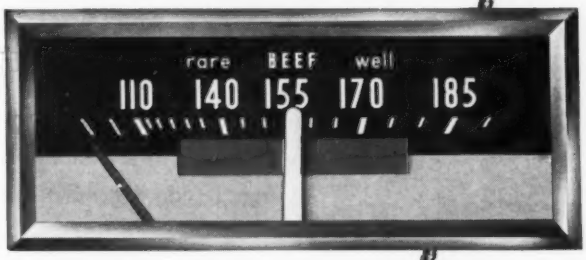
KING-SEELEY ROAST CONTROL*

Assures Perfect Roasts,
Keeps 'em that way



Now, the housewife can always serve a juicy, flavorful roast, oven-hot, done to a turn—*Regardless of how long dinner may have to be delayed.*

K-S ROAST CONTROL removes all uncertainty. She sets the control the way she wants the roast. K-S ROAST CONTROL takes over for her. She sets it, forgets it, serves it whenever she wants it.



HOW?

K-S ROAST CONTROL anticipates desired doneness—reduces oven heat to inside roast temperature and holds it there for as long as necessary till the roast is served—Hot, Juicy, Just Right.

The ability to hold a roast Perfect is NEW. Your customers will like it. Let's discuss its application to your new ranges.

**Newest member of the King-Seeley Chef-O-Matic family of dependable range controls.*

KING-SEELEY
CORPORATION

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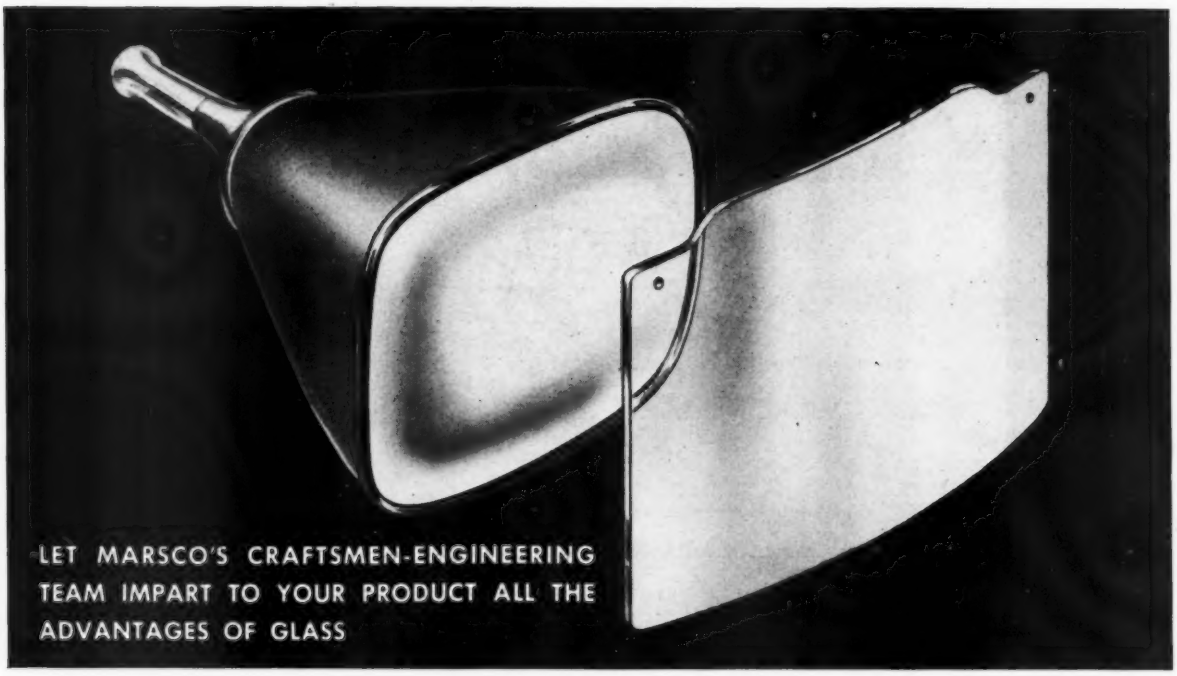
MARSCO

for the Finest in PRECISION GLASS PARTS!



Join the television and appliance manufacturers who are now enjoying extra sales from the appeal and prestige contributed thru the luster of glass. Glass will enhance the beauty and broaden the acceptance of your product. It can be hardened, heat-treated or tempered to survive your consumer usage unscathed.

Here are some of the applications for Marsco heat-treated, tempered and hardened glass parts:

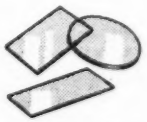
•CLOCK & TIMER CRYSTALS •OVEN DOORS •RADAR EQUIPMENT •AIRCRAFT ACCESSORIES •PHOTOGRAPHIC EQUIPMENT •LIGHT LENSES •DIALS & NAME PLATES •TELEVISION EQUIPMENT •INSTRUMENTS •MEDICAL EQUIPMENT •BACKGUARD GLASS FOR RANGES •LAMP GLASS •SHELVING

Special Shapes for: Instruments, Gauges, Household and Industrial Appliances.

Marsco


Bent Glass


Convex Glass


Heat-treated Glass

MARSCO MFG. CO., 2909 S. HALSTED ST., CHICAGO 8, ILL.

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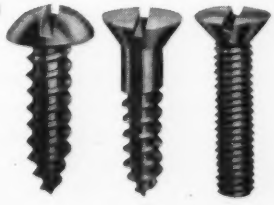
Southern has many customers who know that for every screw requirement, Southern is the source "from which all fine fasteners flow." Southern is proud of being recognized as the source for customers who order and receive screws of highest quality, on time, and at a fair price.

If you haven't tried Southern as the source for your requirements, one order will convince you that you've been missing something. Write for Southern's current Stock List. Address: Southern Screw Company, P. O. Box 1360, Statesville, North Carolina.

Manufacturing and Main Stock in Statesville, North Carolina

Warehouses: New York • Chicago • Dallas
Los Angeles

Machine Screws & Nuts
Tapping Screws
Wood Screws
Stove Bolts
Carriage Bolts
Dowel Screws
Hanger Bolts
Drive Screws



INDUSTRY PERSONALS

Westinghouse Electric Corp.'s Major Appliance Div. has announced the promotion of **C. J. Kenny** to merchandise manager of the Electric Range Dept. Kenny, formerly assistant to the division manager, succeeds H. L. Wiler, recently assigned to the company's Total Electric Home project.

Crane Co. has elected **Wesley A. Songer** as executive vice president, according to an announcement by Thomas M. Evans, chairman of the board. Songer has been executive vice president of American Safety Razor Corp., and on the president's staff at General Electric Corp.

Concurrently, **Ronald W. Lindsay** was appointed to the newly-created position of director of sales for Crane. George F. Burley, vice president of sales, announced Lindsay's appointment. Lindsay had been general manager of wholesaler sales.

KENNY

SONGER

Seaporcel Metals, Inc., Long Island City, N.Y., manufacturer of architectural porcelain, is now operating under new management. The 28-year old company was recently acquired by new controlling interests.

Benjamin B. Loring is the new president and **Stuart B. Greenfield** has been named general sales manager.

Oakite Products, Inc. has announced the appointment of **Benjamin P. Fortin** to the Los Angeles technical service staff. An Oakite representative for nearly 20 years, he will concentrate his services on chemical compounds for the metalworking industries.

Hagen Advertising Displays, Inc., 6230 Wiehe Road, Cincinnati, Ohio, producers of outdoor and indoor signs and advertising clocks, has announced the appointment of **Charles E. Meyer** as sales manager. Mr. Meyer was formerly with Barrows Porcelain Enamel Co. of Cincinnati.

Cribben & Sexton Co., Chicago, has appointed **Marvin A. Kruse** as production engineering supervisor. The appointment was announced by Robert E. Johnson, vice president-engineering, of the Waste King subsidiary.

United Wallpaper, Inc., Chicago, paint manufacturer, has elected **W. A. Ninnis** as vice president of personnel and industrial relations. His election was announced by S. U. Greenberg, president. Ninnis started his career with the Pacific Paint & Varnish Div. of United in 1935. He was transferred to the parent organization in Chicago as director of personnel in 1951.

Republic Steel Corp.'s Truscon Div. has named **John D. Kirkwood** as general manager of sales, according to an announcement by Norman W. Foy, vice president in charge of sales. Kirkwood's most recent duties were as manager of the steel joist and tower products department at Republic's Youngstown, Ohio plant.

Howard Refrigerator Co., Inc., Philadelphia, has announced the appointment of **Charles A. Neiman** to the Application Dept. of the Engineering Div. He most recently served with C. V. Hill & Co.

Consolidated Industries Corp., Lafayette, Ind., subsidiary of Welbilt Corp., has announced the appointment of **R. H. Weber** as president and director. Consolidated manufactures horizontal, vertical, counterflow, and low-boy furnaces.

White-Rodgers Co., St. Louis, manufacturer of temperature controls, has named **James A. Rodgers** as manager of the Technical Sales Div. In his new position, he will be in charge of new product specification planning for products approaching the development stage.

Pittsburgh Plate Glass Co. has announced a series of appointments in the research and development department of the paint division. According to Dr. Howard L. Gerhart, director of research and development, **Richard T. Ubben** has been appointed division technical director, succeeding **W. W. Bauer,** who is working on an overseas assignment for Pittsburgh Plate Glass International.

Robert P. Ericson has been named as assistant division technical director with headquarters at Springdale, Pa. and **R. E. Mutzberg** was appointed technical director, succeeding Ericson, at the East Point, Ga. plant.

Inland Steel Products Co., steel fabricating subsidiary of Inland Steel Co., has elected **Frank L. Wood** vice president of operations to succeed Norman D. Rice, who has resigned.

Carpenter Steel Co., Reading, Pa., producer of specialty steels, has elected **John Moxon** president and **Frank R. Palmer,** chairman of the board. Both men assumed their new posts on July 1.

Formerly executive vice president, Moxon assumes the responsibilities of chief executive officer. Palmer, president since 1948 and veteran of 42 years with Carpenter, fills a vacancy created by the death of J. Heber Parker in 1956.

Parker-Kalon, a division of General American Transportation Corp., fastener manufacturers, has announced the promotion of **William Conover** from field sales engineer to regional sales manager. He will make his headquarters in the Parker-Kalon Chicago office and be responsible for the midwest territory.

MOXON

CONOVER

R. K. LeBlond Machine Tool Co., Cincinnati, has announced the appointment of **Robert E. McKee** as sales manager, according to B. N. Brockman, vice president. McKee was formerly sales engineer and director of technical and engineering training for LeBlond and its subsidiaries.

The **Maytag Co.** has named **Fred Wiklund** to fill the newly-created post of branch freezer specialist for the company's Indianapolis, Cincinnati, and Chicago branches. The position was created to meet the needs of expanding freezer sales in these areas.

United States Chemical Milling Corp.'s president, C. H. Lundquist, has announced three promotions. **L. B. Stearns** has been promoted to the newly-created position of project manager. He has been the corporation's chief engineer for the past three years.

Don C. Atkins was named director of the new technical department, which will be responsible for research and de-

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For aluminum sheet in any form—flat sheet, coiled sheet or circles—those responsible for purchasing and manufacturing should know that every alloy Fairmont offers is rolled every working day . . . no waiting for orders to accumulate for scheduling a production run.

This Means:

- Less delivery lead time between ordering and shipment—speeding delivery and close integration with other production elements. Overnight delivery is frequently possible.
- Manufacturing inventories are kept low, reducing investment in floor space and work in progress.
- Fabricators' change orders, if necessary, may be executed rapidly and economically.

Fairmont's customized attention to all orders, both large and small, has merited an association with an ever growing list of customers over the past 32 years.

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velopment, process control, and technical support to the contracts department. For the past two years, Atkins has been assistant chief engineer. **J. T. Willoughby** has been promoted to chief engineer, in charge of planning and estimating, mechanical product design, and industrial and customer engineering.

Kolene Corp., Detroit, has named **William P. Ziegler, Jr.** as national sales manager. Kolene designs and manufactures molten salt bath equipment and processes used in a wide variety of metal cleaning applications. Ziegler has been with the company since 1949.

Philco Corp.'s Government & Industrial Div. has announced two new appointments. **L. G. Becker** has been named eastern regional manager with headquarters in Washington, D.C. **Norman O. Bender, Jr.** takes the post of operations manager for Transac computers, a newly-created position.

SKF Industries, Inc., Philadelphia, ball and roller bearing manufacturer, has named **William J. Brickley** as manager of labor relations, according to Thomas F. Morris, vice president of industrial relations. He succeeds Donald B. Cutler.

Carrier Corp. has named three men to newly-created, senior staff positions, according to Cloud Wampler, chairman of the board. **Frank R. Littlefield** has been elected a vice president and director of manufacturing, **Walter H. Steitler** has been named a vice president and director of marketing, and **Walter A. Grant,** already a vice president, becomes director of engineering.

Copeland Refrigeration Corp. has elected **B. W. Moreland** as vice president, according to an announcement by Frank J. Gleason, president of the firm. Moreland will continue to head all manufacturing operations. He has held the post of general manager of manufacturing for the past year.

Van Huffel Tube Corp., Warren, Ohio has named **Ken Abbott** sales manager of the newly-established west coast sales office in Maywood, Calif. The office will be known as Van Huffel Western Corp., and is located at 4757 E. Slauson Ave.

Carl H. Biggs Co., Santa Monica, Calif., has announced that **Dudley P. Biggs** has joined the company as manager of the new Custom Fabrication Dept. He was formerly associated with Rheem Mfg. Co., where he served eight years in various capacities.

MacDermid Inc., Waterbury, Conn., manufacturer of metal cleaning, plating, and finishing chemicals, has announced the election of **Arthur R. McNeil** as a director of the company. McNeil will continue his duties as vice president and New England sales manager of the corporation.

Royal McBee Corp. has named **Charles E. Shinn** director of research and development, according to an announcement by Philip M. Zenner, president. Shinn will make his headquarters in Hartford, Conn., location of the company's research and development center.

SKF Industries, Inc. has announced the appointment of **George E. O'Connor** to the newly-created position of manager, market analysis, according to an announcement by R. S. Overton, director of marketing. SKF manufactures ball and roller bearings.

Heppenstall Co., Pittsburgh, manufacturer of die steels, industrial knives, steel forgings, and materials handling equipment, has announced the appointment of **Victor H. Lanahan** as purchasing agent. He has been manager of ring sales since 1958. Prior to joining Heppenstall, he was employed by the Link-Belt Co. and the Stewart-Warner Corp.

Metal Products Div., Koppers Co., Inc., has announced the appointments of **James P. Haas** as manager of research and development, and **G. V. Middaugh** as manager of the newly-formed contracting department. The contracting department will handle all sales and engineering activities for contracting work, gas apparatus, and coke oven equipment.

The Colorado Fuel & Iron Corp.'s Claymont plant has announced the appointments of **Frank E. Walling** as general superintendent and **Ernest C. Soffronoff** as superintendent of maintenance. The appointments were announced by S. A. Ott, vice president of operations, Eastern Div.

Ceco Steel Products Corp., Chicago, has appointed **Paul Kuehn** to the newly-created position of manager of purchases, according to C. Foster Brown, executive vice president. Ceco is a national manufacturer of building products for the construction industry.

MOOG Servocontrols, Inc., East Aurora, N.Y., has announced the establishment of an Industrial Div. to be headed by **Harvard B. Kolm.** The division will be responsible for the development of an industrial product line, formally extending the company's activities into the commercial field.

Blaw-Knox Co., Pittsburgh, has named **W. J. Wenger** vice president-roll sales, succeeding **A. E. Murton,** who was advanced to vice president in charge of the new Foundry & Mill Machinery Group. Named to succeed Wenger as assistant manager of roll sales is **Richard F. Ringham,** formerly roll sales engineer.

Pace, Inc., Mansfield, Ohio, manufacturer of thermal controls, has appointed **A. Fred Penny** as their Canadian representative. Well known in the appliance industry, Penny has been Canadian representative for the General Electric Co. in both the Telechron Div. and the Specialty Resistors Section.

Crucible Steel Co. of America has announced the appointment of **Dr. F. C. Langenberg** as manager of process research. Formerly chief development metallurgist at the company's Midland, Pa. works, he will now be responsible for developing technical specifications for all process research facilities at the Crucible Technology Center.

Aluminum Co. of America's board chairman, I. W. Wilson, has announced the election of **Frank L. Magee,** president, as chief executive officer of the company. Also announced was the elevation of three vice presidents to the rank of executive vice president, and the election of two new vice presidents.

Named to serve as executive vice presidents were **M. M. Anderson, Leon E. Hickman,** and **Lawrence L. Litchfield, Jr.** Newly elected to the posts of vice president were **Theodore W. Bossert** and **Robert A. Learnard.**

Vinyl Metal Products Div., Columbus Coated Fabrics Corp., Columbus, Ohio, has announced the appointment of **Robert A. Brewer** as assistant to Edward L. Mahoney, director of sales. The appointment was announced by C. Gordon Jelliffe, vice president.

Electric Auto-Lite Co., Toledo, Ohio, has named **Edwin R. Stroh** to the newly-created post of vice president and director of sales, according to James P. Falvey, president. The new position was created because of expanded sales activity.

Which panel took the longest salt shower?

Above, unprotected steel panel (left), degreased and painted—exposed to 96 hours of salt spray, compared to panel (right) protected by PRE-FOS before being given identical coat of paint and exposed to *250* hours of salt spray!

The one on the right— the steel panel protected before painting by Wyandotte PRE-FOS®

The painted steel panel showing by far the least corrosion damage was exposed to A.S.T.M. standard salt spray *154 hours longer* than the badly rusted one! . . . proof of the effectiveness of PRE-FOS in the preparation of metals for painting.

Wyandotte PRE-FOS simplifies processing by cleaning and phosphating in a *single* operation; deposits a fine-grained, corrosion-resistant iron phosphate coating, which saves paint and provides superior impact resistance.

What's more, PRE-FOS prevents rusting of "in-process" steel parts; may be adapted for spray-washing or soak-tank use.

Improve your "finish" with PRE-FOS. Get details from your Wyandotte man, today! *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Also Los Nietos, California. Offices in principal cities.*

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THE BEST IN CHEMICAL PRODUCTS FOR METAL FINISHING

Norge Sales Set May Mark

May Norge home appliance factory sales were the highest for any May in Norge's history, according to Judson S. Sayre, president. The record total was 49 per cent above 1958 figures, and volume for the first five months of '59 topped '58 Norge figures by 39 per cent. Sayre added that May was the second month in a row that Norge set an all-time mark for a given month, since April was the best April on record, also.

Roper Offers Gas Dryer, Incinerator

According to officials of the Geo. D. Roper Corp., Kankakee, Ill., two recently-introduced gas appliances have had considerable marketing success. Roper's automatic gas clothes dryer and smokeless, odorless gas incinerator are the products.

The clothes dryer features a 130-minute timer, snag-free, satin-bronze tub, automatic lighting, and safety features. The gas incinerators are offered in white with appliance-styled back panel, and in charcoal gray enamel.

Maytag To Double Dryer Output

The Maytag Co. has announced that it will double production of gas and electric clothes dryers in response to anticipated seasonal upturns in demand. Company officials said that production increases will add approximately 165 persons to its employment rolls.

Canadian Stove and Furnace Manufacturers Meet

"Partners in Profit" was the theme used throughout the summer conference of The Canadian Institute of Stove and Furnace Manufacturers, held at the Chantecler Hotel, Ste. Adele, in the Laurentians, on June 22 and 23. Members heard various speakers' suggestions on how to rebuild prestige and profits by selling quality, service, and features, instead of just selling price.

Cribben & Sexton Sells Space Heater Business

Cribben and Sexton Co., Chicago, has sold its "Constant Comfort" gas space heater business to Suburban Appliance Co., Whippany, N.J., according to presidents Wendell C. Davis of Cribben and Sexton and Albert H. Cote of Suburban Appliance. Purchase price was not disclosed.

Suburban Appliance, a subsidiary of Suburban Propane Co., manufactures gas space heaters, water heaters, and clothes dryers. Production equipment and inventory will be shipped from the Cribben & Sexton plant in Michigan City, Ind. to Suburban's Dayton, Tenn. plant.

Pfizer Executive Wins AMA Gold Medal

Thomas M. Cooney, administrative assistant to the president of Chas. Pfizer & Co., Inc., has been given the gold medal award by the New York chapter of the American Marketing Association. He was selected as the student showing the "greatest potential for leadership in the field of marketing" in his graduation class at New York University.

Cooney received his master's degree in marketing from the University's Graduate School of Business Administration. His selection as recipient of the marketing medal was based on academic accomplishment and faculty recommendations.

Acme Industries Opens Cleveland Office

A new direct factory sales office has been opened in Cleveland by Acme Industries, Inc., manufacturer of air conditioning and refrigeration systems for commercial and industrial use. The manufacturer has announced that the Cleveland branch will serve the Cleveland-Akron marketing area.

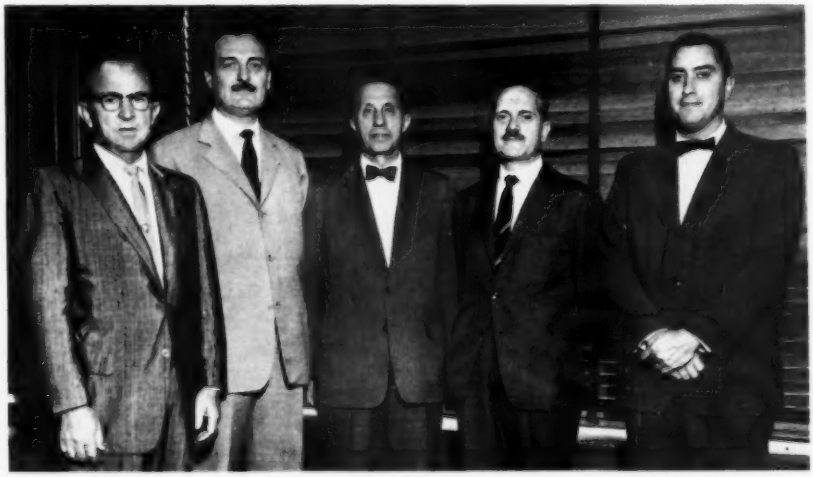
ISA Expands Schedule

A major expansion of its schedule of technical meetings and exhibits has been completed for 1960 by the Instrument Society of America. The schedule inaugurates the society's new policy of bringing presentations of the latest instrumentation development to principal areas of the nation's instrumented industries. Conference-exhibits are scheduled next year for Houston, Feb. 1-5; San Francisco, May 9-13; and New York City, Sept. 26-30.

RWMA New Business Rising

Monthly statistics compiled by the Resistance Welder Manufacturers' Assn. indicate that new business has been increasing steadily since the first of the year. The current tabulation reflects a 42-per cent gain in net orders for the first five months of '59, as compared to the same period last year. Shipments continue to exceed $2,000,000, and are 15 per cent ahead of the same period in '58.

Italian Stove Makers Visit Locke



Two executives of a leading Italian stove factory were guests of Locke Stove Co. recently, marking the 10th year of association between the Italian and American firms. They were Dr. Paolo Alberti, president, and Enrico Baj-Macario, managing director of Fonderie E Officine DiSarrono S.p.A. Shown at Locke's Kansas City offices are (L-R) A. J. Estes, Locke vice president; Baj-Macario; E. M. Douthat, Locke president; Dr. Alberti; and E. M. Douthat, Jr., Locke vice president in charge of sales.

Halket Elected To Board of PHCIB

The election of W. T. Halket as a member of the board of directors of the Plumbing-Heating-Cooling Information Bureau has been announced by Howard L. Spindler, bureau president. Halket is director of marketing, Permaglas Div., A. O. Smith Corp., Kankakee, Ill.

NEMA Announces "Snowman" Award

The establishment of an annual award to the manufacturer making the outstanding contribution to the air conditioner industry's yearly "Beat the Heat" promotion has been announced by the Room Air-Conditioner Section of the National Electrical Manufacturers Assn. The award will be a statuette of a snowman holding an air conditioner.

Resistance Welding Alloy Assn. Elects Cox President

Members of the Resistance Welding Alloy Assn. recently elected James C. Cox as president to succeed J. A. O'Grady. Cox is president of the S-M-S Corp., Detroit, and is chairman of the association's Standards committee, which is engaged in developing a new numbering system for electrodes and electrode holders.

Royal Industries Purchases Audio Corp. of America

Royal Industries, Inc., Los Angeles, has announced the completion of negotiations for the acquisition of Audio Co. of America, Inc., Phoenix, Arizona, manufacturers of miniaturized hearing aids. In making the announcement, President M. L. Bengston of Royal stated that the addition of Audio will increase Royal's sales this year by more than $1,000,000.

Bliss Elected President Of Mfg. Chemists Assn.

L. G. Bliss, president of Foote Mineral Co., Philadelphia, has been elected to the board of directors of the Manufacturing Chemists' Assn. for a three-year term. The election was announced at the 87th annual meeting of the association at White Sulphur Springs, Va.

Thermoelectrics And Appliances

A research contract for the development of thermoelectric, temperature-controlled chambers for electronic components has been awarded the Whirlpool Corp. by the U.S. Navy. This is the second recent government contract for thermoelectric research to be awarded Whirlpool.

Commenting on the future commercial application of these temperature-controlled chambers, William E. Mahaffay, vice president of research and engineering at Whirlpool, said, "It is conceivable that the basic principals of such miniature ovens and refrigerators will revolutionize the preservation and preparation of foods, the heating, cooling, and purification of water, and the air conditioning and heating of our homes."

Thermoelectrics represents the application of a system of providing heat and cold from the same electronic device.

Republic Opens Research Center, Announces New Strip Process

Republic Steel Corp.'s $5,000,000 research center has been officially opened. The center is located on a 106-acre tract of land in Independence, Ohio, a Cleveland suburb, and is about five miles from Republic's Cleveland steel plant.

At the formal dedication of the center, it was announced that the research center has successfully produced strip steel from iron ore, without melting. According to Peter Robertson, vice president in charge of research and planning, the process bypasses such operations as coke ovens, blast furnaces, open hearths, and blooming mills.

Exterior of Republic's new research center which was formally dedicated June 18. The 120,000-square foot building will serve as the coordinating center for all research and development activities being conducted by the nation's third largest steel company. Stainless steel has been featured extensively throughout the building.

Industrial Finishing Exposition Held In Detroit, June 16-19

The fifth annual Industrial Finishing Exposition, held June 16-19 at the Detroit Artillery Armory, found the latest methods of preparing and finishing metal being introduced. Held in conjunction with the American Electroplaters' Society's convention, the exposition attendance was at a record level.

Exhibits included a demonstration of a hand-gun, electrostatic spray method, an electronic coating thickness tester with a two-pole, small dimensional probe, information on industrial tubular filters for appliance manufacturing and vitreous enameling, and introduction of a non-acid alkaline rust remover.

May Aluminum Production Sets Record

Primary aluminum production in the U.S. reached a record-setting high of 163,857 short tons in May, according to figures released by the Aluminum Assn. This brings the total for the year to 775,076 short tons, as compared to a total of 647,236 short tons for the first five months of 1958. The May, '58 total was 126,327.

Art Metal Acquires Knoll Enterprises

Andrew Wilson, chairman of the board and chief executive officer of Art Metals Construction Co., New York, N.Y., has announced the acquisition of Knoll Associates, Inc. and Knoll International, Ltd., manufacturers and designers of contemporary furniture. The Knoll companies will continue to operate as individual concerns, maintaining their present facilities.

Wilson stated that "The design direction of Art Metal represents the logical extension of the work of this design firm to the broad field of metal office furniture, and should greatly advance our ability to meet the requirements of modern offices and institutions."

Bethlehem Steel Has New Vitreous Enameling Sheet

A vitreous enameling sheet "of entirely new chemical composition and with excellent enameling properties" has

been developed by Bethlehem Steel Co., according to a current report. "It is not only suitable for standard two-coat enameling processes, but under certain conditions, it may be used with equal success for single coatings," the report states.

Work on the new material was started in the Bethlehem research department nearly two years ago, and it is now in pilot plant production. Commercial production is scheduled to start late this year. Bethlehem says that extensive tests have been carried out on sheets and on coils, both in the laboratory and in the field, by manufacturers of appliances, architectural panels, sanitary equipment, as well as by frit suppliers.

The results of the tests show that boiling and "fish-scaling" present no problem with the new material. The sag resistance is also reported as superior to that of the conventional type enameling sheets, especially above 1500° F.

Colored Stainless Steel Makes Its Architectural Bid

Pittsburgh's Gateway Center is adding another innovation to its collection of metal buildings. Colored stainless steel panel sections have been ordered for the exterior trim of the new Gateway Building #4. These gray-colored panels will mark the first architectural application of colored stainless steel, other than black, for a major office building, according to a spokesman for Washington Steel Corp., Washington, Pa., the company awarded the colored stainless contract.

The new coating system, under development for the past two years, was worked out jointly by Washington Steel and Stoner-Mudge Div., American-Marietta Co. It consists of a one-mil coating of colored acrylic resin which is baked. With a wide selection of colors available, these companies believe a whole new market will open up for a greater use of stainless steel in interior, as well as exterior, applications.

"The Gateway Building will be a showcase for our new line of 'Color-Rold' stainless steels, which are bound to forge ahead in the vast architectural field," said Darwyn I. Brown, assistant to the president of Washington Steel.

"Colored metals such as porcelain enameled steel and anodized aluminum are widely used for architectural purposes," Brown said, "but the new coatings are much less expensive and add flexibility in fabrication in that colored stainless can be roll formed, bent, and drawn without damage to the coating."

Maytag Stockholders Vote Two-For-One Split

Stockholders of The Maytag Co. have approved a two-for-one split of the firm's common stock and authorized an increase to five million for the number of shares which may be issued.

Commenting on business conditions at the stockholders' meeting, President Fred Maytag II reported that the company's sales and earnings are at record levels. He estimated sales for the first half of 1959 at approximately $60,000,000, which would be the best first-half figure in the company's history.

Metalspinning Firm Operating

A new metalspinning firm has opened production facilities at Fort Atkinson, Wis., it was announced by the company's president, Robert C. Carmichael. Called Metalspin, Inc., the corporation is set up to make complete metalspinning facilities available to manufacturers in Wisconsin, Illinois, Iowa, Minnesota, Indiana, and Michigan. The company is backed by the engineering firm of Norland Associates, Fort Atkinson, and through this affiliation, will have access to its engineering, testing, and laboratory departments.

NEMA Publications Available

The following National Electrical Manufacturers Assn. publications are now available: DC 3-1959, Room Thermostats—40 cents per copy; LP 1-1959, Industrial Laminated Thermosetting Products—$2.75 per copy; LP 3-1959, High Temperature Properties of Industrial Thermosetting Laminates—30 cents per copy; RI 6-1959, Electrochemical Processing Semiconductor Rectifier Equipments—60 cents per copy; SH 18-1959, Luminaire Head to Receive External, Locking-Type Unit Control—25 cents per copy.

Hooker Chemical Completes New Research Center

With the completion of this new research center on Grand Island, Hooker Chemical Corp., Niagara Falls, N.Y., formally centralized all research previously carried on in the research departments of five Hooker subsidiaries. Purposes of the $3,600,000 center are to foster corporate growth and to service the various company divisions of the corporation. The research center was dedicated June 2.

Bell-Ray Moves Plant

Bell-Ray Chemical Corp., Chicago, has announced that it has moved its Milwaukee plant to larger quarters to meet the increased demand for its metal conditioner and related products for the plating and metal finishing industries.

Dr. Frederick Reich, president, said that the change was effected without interruption of manufacturing schedules. He also stated that the number of sales representatives for Bell-Ray is being increased.

GE, U.S. Steel Announce Joint Research Program

General Electric Co. and United States Steel Corp. have announced a joint research program to develop improved steels for use in nuclear power reactors. The program constitutes the first large-scale investigation of radiation effects on steels to be wholly financed by private industry. It is expected that this testing and development program will provide new steels with superior properties, thus hastening the advent of economic nuclear power.

Brisk Waterproofing Moves

Brisk Waterproofing Co. and its division, Brisk Metal Products, have moved their plant and offices to Ridgefield, N.J. The bulk of the plant will be occupied by the metal products division for the manufacture of architectural aluminum specialties such as louvers, solar canopies, and vent housings. The division had been located at Long Island City, N.Y.

Kaiser Management Changes

Henry J. Kaiser, Sr. has announced three important changes in the top management structure of the principal companies in the Kaiser industrial group. He said that the boards of directors of

to Page 82 →

THE ONES THAT WILL LAST (and last, and last!)? THOSE MADE FROM CONTINUOUS PROCESS ZINC-COATED STEEL SHEETS

And just why will they last and last?

The people of the Galvanized Container Industry, always alert to make improvements to keep their products the best, can give you a multitude of reasons why. Chief among them: the continuous process insures a uniformly applied, corrosion-resistant zinc-coating. In fact, the zinc and steel are integrated to form a tight bond for every square inch, a durable coating which stands up to any rigorous stress of the fabrication process.

Continuous process zinc-coating will not chip or flake, no matter how much it is twisted, crimped or lock seamed. It can be worked to the very limits of the steel itself! Your budget benefits because there is no need for additional coating of any kind.

In continuous process zinc-coated steel, there is a stand-out—Weirkote. On your production lines and in your products, Weirkote will work for you all of the time. For detailed information on the many advantages of Weirkote zinc-coated steel, write today for a brochure. Weirton Steel Company, Dept. R-19, Weirton, West Virginia.

WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

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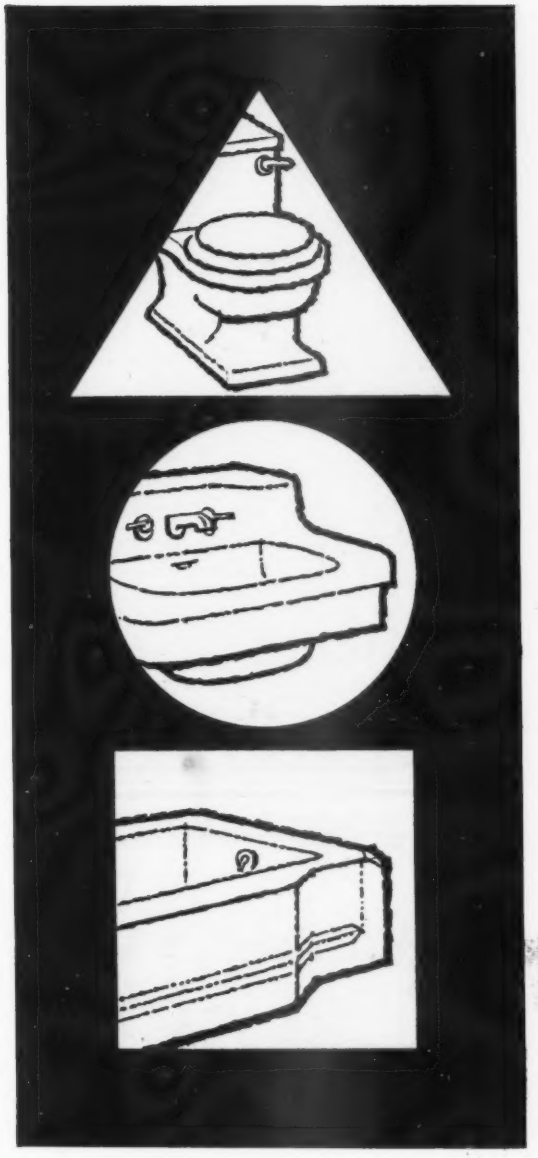

Colors that MATCH in any light, on any fixture

Colors that change with the lighting or from fixture to fixture can cost you customers.

Play it safe. Standardize on FERRO colors.

We can supply them for all ceramic processes—wet or dry process porcelain enamels and ceramic glazes. They're formulated to match each other—look completely *right*—under any lighting.

Ferro's experienced technicians can take the guesswork out of color problems. How about letting them work for you?

FERRO

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Color Division

CANADA: FERRO (CANADA) LTD., OAKVILLE, ONTARIO

Check Ferro first for ceramic engineering, dryers and kilns, glaze frits and colors, and production supplies.

News

→ *from Page 79*

the companies have elected: J. L. Ashby, president and chief executive officer of Kaiser Steel Corp.; S. A. Girard, president and chief executive officer, Willys Motors, Inc.; and D. A. Rhoades, president and chief executive officer, Kaiser Aluminum & Chemical Corp. Each of the above has served as vice president and general manager of their respective organizations.

"The continued growth of each of these Kaiser companies within its particular field of interest has dictated this move," Kaiser emphasized. "It will permit, within the policies set forth by the parent firm, more freedom of action, greater autonomy, and more opportunity within the management group of each of these organizations."

NEMA Favors Use of National "Discomfort Index"

MPM readers may have noticed the recent reporting of daily and/or hourly Discomfort Index reports which consist of announcement of a combined temperature and humidity report, as suggested by the U. S. Weather Bureau.

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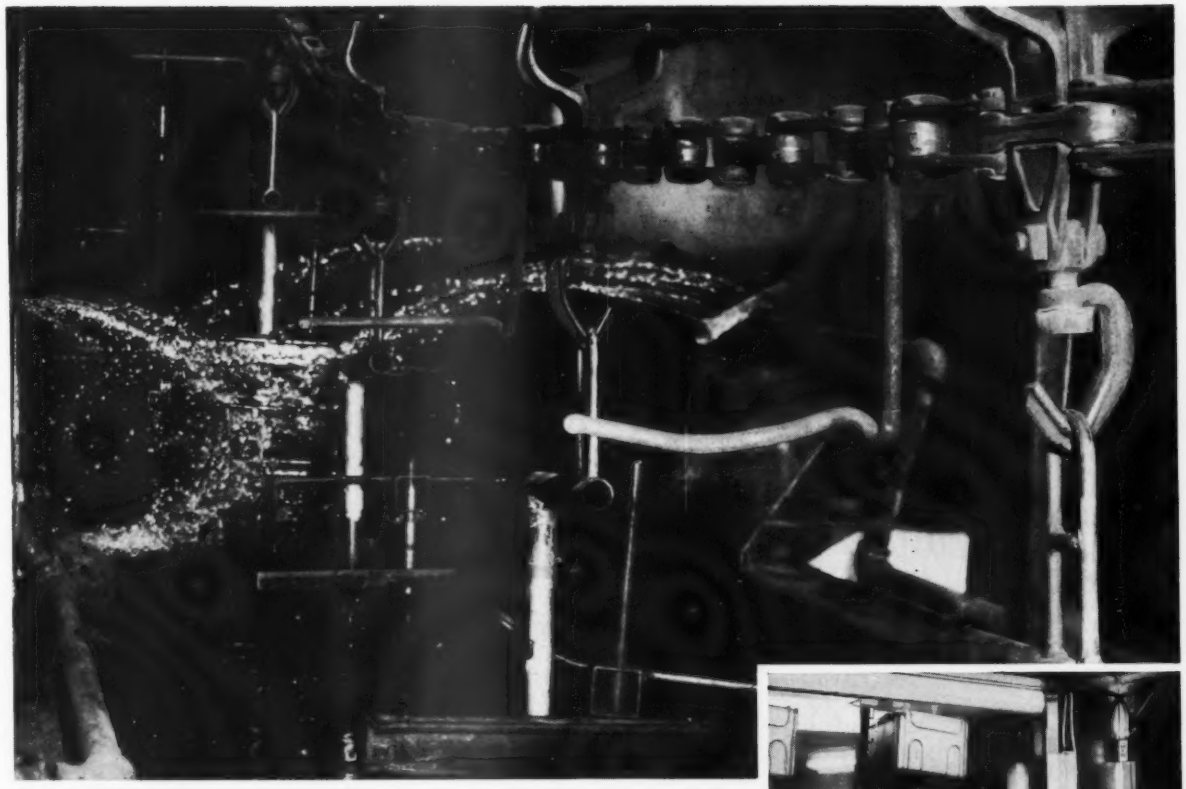
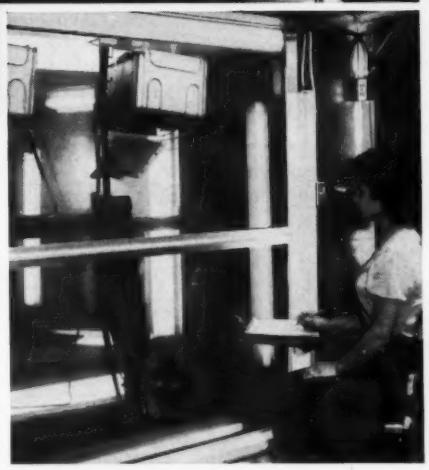




KERNS' SOLVENT TYPE STRIPPERS VITAL PART OF HOTPOINT PRODUCTION PROCESS

Continuous production processes at Hotpoint require the stripping of paint from carriers and hooks without slowing down the conveyor lines. **A stripper tank is used as an integral part of the production procedures.** Carriers or "hooks" are drawn through the solvent type stripper without removal from the conveyor, and then pass through a water spray for rinsing. Tank size is approximately 5,000 gallons, using 3,600 gallons of **Kerns' Solvent Type Stripper** and 500 gallons of water which floats on the top forming a protective blanket. 200 "hooks" an hour pass through each stripping tank every day. Yet, the **Kerns'** Solvent Type Stripper is **changed only twice a year.**

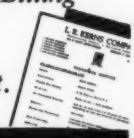
Hotpoint uses Kerns' Stripper because it has extremely **long tank life** with **outstanding stripping power.**

Kerns' Solvent Type Stripper assures that "hooks" are absolutely clean before entering leak testing tank which must be kept completely free of any foreign matter at all times.

MEMO BILLING TRIAL BASIS

Find out, today, what Kerns' Strippers can do for **your** operation. Try it . . . we supply material for production test . . . no formal invoice rendered unless completely approved in production. Remember . . . with Kerns you get compounds tailored to your production procedures.

Write for further information regarding Kerns' Memo Billing Trial Basis, Technical Data Brochure with Stripper Selection Chart.



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Subsidiary Plant **KERNS PACIFIC CORPORATION**

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GENERAL STEEL WARES LIMITED

BRANTFORD WASHING MACHINES LIMITED

RMA-VIEW

Gurney PRODUCTS LIMITED

manufacturers learn of the sales advantages of the PERMA-VIEW "No-Fog" window. From Canada to Europe—to Australia or South Africa —PERMA-VIEW is recognized as the finest and most economical oven door window.

(The accompanying names and trademarks represent some of the present users outside the United States.)

Canadian Admiral CORPORATION, LTD.

P. J. Manufacturing, Incorporated

McCORMACK SMYTH LIMITED

SUNSHINE WATERLOO CO. LIMITED
WATERLOO, ONTARIO

The strong steel encased, double pane PERMA-VIEW window incorporates the finest quality heat resisting glass. It is mechanically sealed to prevent infiltration of vapors and to eliminate "fogging." For the homemaker it presents an "invitation to buy."

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THERMAX LIMITED

The PERMA-VIEW window is pre-engineered, and comes to you ready for immediate installation in your range. "Out of our carton into your door." Let our specialized production lines serve as a part of your sub-assembly facilities. If you do not use a window, if you make your own window, or if you buy your window from another source, we suggest you phone or write us for complete details on the ease and economy of adding this sales feature to your new ranges.

A. BELANGER LIMITED

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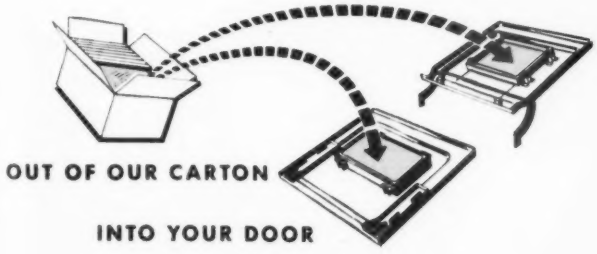
(MAATSCHAPPIJ TER VERVAARDIGING VAN GASMETERS, ENZ.)

Husqvarna Vapenfabriks Aktiebolag
Huskvarna - Sweden

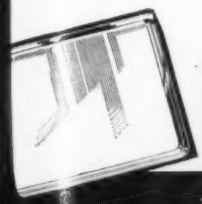


OUT OF OUR CARTON

INTO YOUR DOOR

CANADIAN WESTINGHOUSE COMPANY • LIMITED

Alternate methods of attachment may be used.



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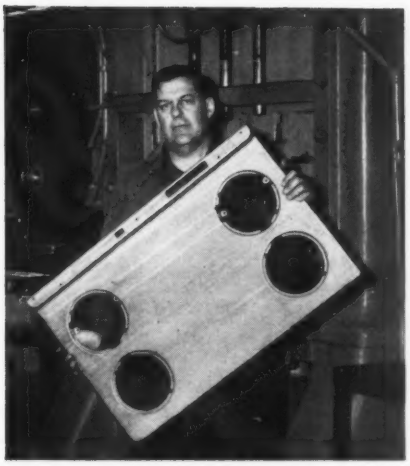
1015 WEST MAPLE ROAD • WALLED LAKE, MICHIGAN

THIS IS A GENUINE PERMA-VIEW PATENTED NON-FOG WINDOW
CLEAR VISION Always!



Sunray pressman
displays range top that has just been blanked and formed from a quality Youngstown Porcelain Enameling Sheet.

Accent on Excellence

Youngstown cold-rolled and porcelain enameling sheets

What modern young homemaker wouldn't be in "seventh heaven" when she prepares meals in her new kitchen, accented by this modern Sunray "TOUCH OF TOMORROW" —the world's first push-button, remote control gas range.

Both Youngstown Cold-Rolled Sheets and Porcelain Enameling Sheets are the basic raw materials used by the Sunray Stove Co., of Delaware, Ohio. This is one of the prime reasons Sunray product quality is so well known throughout the highly competitive appliance field. These highly dependable Youngstown steels provide Sunray with increased production, lowered reject rates, faster and more accurate forming as well as lowered fabrication and die costs.

Wherever steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence".

THE
YOUNGSTOWN
SHEET AND TUBE COMPANY
Youngstown, Ohio

Manufacturers of Carbon, Alloy and Yoloy Steel

METAL PRODUCTS STATISTICS

a current report on available production, shipment and sales figures for important products in the appliance and fabricated metal products manufacturing field

		1959 (Units)	1958 (Units)	% Change
Gas Water Heaters	May	239,100	210,000	+13.9
	Jan.-May	1,292,100	1,105,200	+16.9
Gas Ranges, Built-In	May	28,900	18,100	+59.7
	Jan.-May	121,600	74,600	+63.0
Gas Ranges, Free-Standing	May	129,000	129,200	- 0.2
	Jan.-May	673,800	632,600	+ 6.5
Gas Furnaces	May	73,800	56,800	+29.9
	Jan.-May	342,500	248,900	+37.6
Gas Fired Boilers	May	7,900	7,900	0.0
	Jan.-May	36,100	31,400	+15.0
Gas Conversion Burners	May	8,000	9,900	-19.1
	Jan.-May	33,900	38,800	-12.6
Electric Refrigerators	May	308,200	262,900	+17.2
	Jan.-May	1,505,300	1,168,700	+28.8
Electric Freezers	May	121,700	87,900	+38.4
	Jan.-May	525,400	372,100	+41.2
Electric Ranges, Free-Standing	May	71,500	53,000	+34.9
	Jan.-May	418,600	336,200	+24.5
Electric Ranges, Built-In	May	61,900	43,000	+43.9
	Jan.-May	278,900	191,000	+46.0
Electric Storage Water Heaters	May	72,300	66,100	+ 9.4
	Jan.-May	356,600	322,900	+10.4
Electric Dishwashers	May	36,500	30,600	+19.3
	Jan.-May	205,300	149,800	+37.0
Electric Food Waste Disposers	May	53,600	46,400	+15.5
	Jan.-May	285,900	221,400	+29.1
Combination Washer-Dryer	May	11,604	7,780	+49.0
	Jan.-May	76,826	57,782	+33.0
Washers, Automatic & Semi	May	207,422	191,779	+ 8.0
	Jan.-May	1,111,258	970,328	+15.0
Washers, Wringer & Others	May	70,512	71,220	- 1.0
	Jan.-May	357,033	318,434	+12.0
Electric Dryers	May	31,318	28,515	+10.0
	Jan.-May	291,948	236,863	+23.0
Gas Dryers	May	14,585	13,383	+ 9.0
	Jan.-May	144,635	95,509	+51.0
Vacuum Cleaners	May	257,345	218,766	+17.6
	Jan.-May	1,435,216	1,248,597	+14.9
Metal Furniture	May	*	*	+14.0
	Jan.-May	*	*	+ 5.0
†Television	May	431,911	266,982	+61.8
	Jan.-May	2,211,712	1,790,840	+23.5
†Radio	May	1,039,562	620,899	+67.4
	Jan.-May	5,677,421	3,876,737	+46.4
Compressor Bodies (1)	March	731,970	*	*
	Jan.-Mar.	1,812,960	*	*
Steel Barrels & Drums	April	3,071,937	2,573,699	+19.0
	Jan.-Apr.	11,131,243	9,985,509	+11.5
Steel Pails	April	7,723,823	6,099,968	+26.6
	Jan.-Apr.	24,851,923	21,507,507	+15.5
Typewriters	May	91,732	84,127	+ 9.0
	Jan.-May	461,478	*	*

(1) Includes units for household
* Not Reported
† Output

Sources for this information: Gas Appliance Manufacturers Association, National Electrical Manufacturers Association, American Home Laundry Manufacturers Association, Vacuum Cleaner Manufacturers Association, National Association of Furniture Manufacturers, Electronic Industries Association, Air-Conditioning and Refrigeration Institute, and U.S. Dept. of Commerce.

News → *from Page 82*

A recent letter from Joseph F. Miller, managing director of NEMA, to F. W. Reichelderfer, chief, U. S. Weather Bureau, Washington, D. C., states in part, "Congratulations! The National Electrical Manufacturers Association and, particularly, its Room Air-Conditioner Section, take this opportunity to commend you and your competent staff for suggesting that local weather bureaus issue a daily and/or hourly Discomfort Index in their respective service areas."

IN THIS ISSUE

Here is Maxine "Max" Blackman, fashion editor of the Houston Chronicle, ex-publicity coordinator for one of Texas' leading department stores, and *homemaker*. In this issue, "Max" reports on the service situation in Texas . . . with case history information. See Page 26.

GENERAL

★ MPM'S 13TH ANNUAL HOME LAUNDRY SECTION ★

DESIGN

THE ULTRASONIC DISHWASHER

FABRICATION

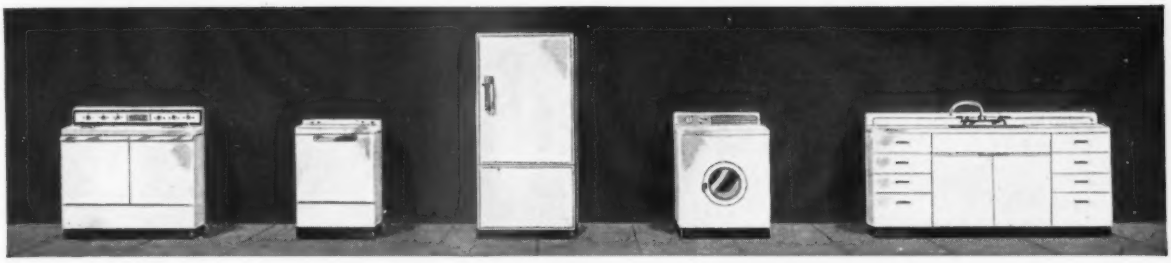
BUFFING OF STAINLESS STEEL

PROCESSING METAL TOPS AT ALL-STEEL EQUIPMENT

FINISHING

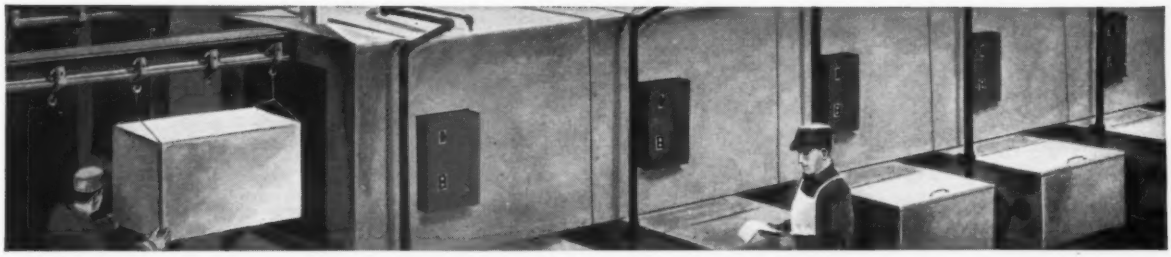
BELGIUM RANGE MANUFACTURER INCORPORATES LATEST PORCELAIN ENAMELING METHODS

A CONTINUOUS, CLEANING PAINTING PROCESS



PRODUCT PROTECTION

MEANS CUSTOMER SATISFACTION



WITH AMCHEM GRANODINE

Mechanical and electrical performance notwithstanding, the external appearance of appliance products weighs heavily in determining continued brand preferences.

That is why many major appliance producers have insisted upon the use of Amchem Granodine as a durable base for paint finishes. This efficient chemical solution ideally converts metallic surfaces to a nonmetallic phosphate coating of the proper texture, acts as a reliable inhibitor of corrosion while greatly increasing the adhesion and durability of the paint finish.

You'll find Amchem Granodine an economical and reliable method of providing that lasting protection so important to the future sale of your products . . . at a cost consistent with manufacturing budgets. And you can count on Amchem's complete technical and engineering service to keep Amchem chemicals working at the level of greatest efficiency in providing protection that lasts for the life of your product.

Shown above is typical Amchem power spray system for chemically treating steel products.

Write for Bulletin 1380A with handy Selection Chart to help you choose proper Granodine type for your specific needs. Also available are bulletins describing other Amchem chemicals for use in appliance manufacturing.

AMCHEM GRANODINE

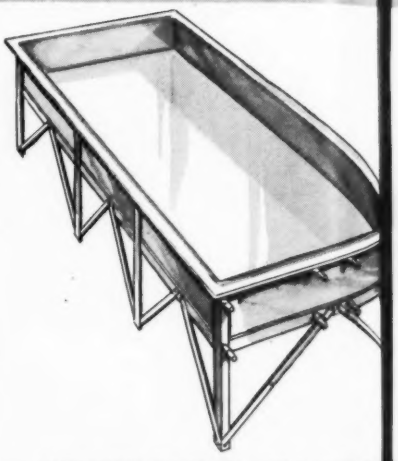
Amchem Granodine is another chemical development of **Amchem Products, Inc.**, Ambler, Pa. • Formerly American Chemical Paint Company Detroit, Mich. • St. Joseph, Mo. • Niles, Calif. • Windsor, Ont./Amchem and Granodine are registered trademarks of Amchem Products, Inc

No matter what you need . . . in

EQUIPMENT

BALL MILLS

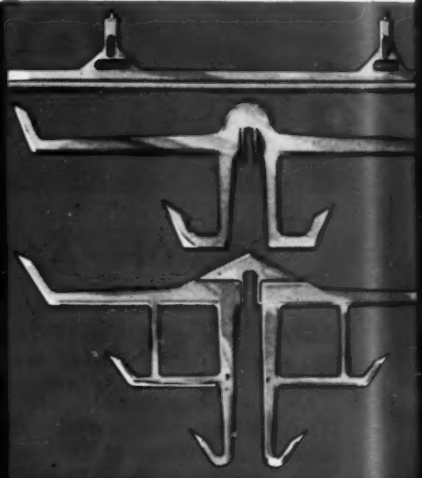
BRUSHES



CIRCULATING DIP TANKS

ENAMEL STORAGE TANKS

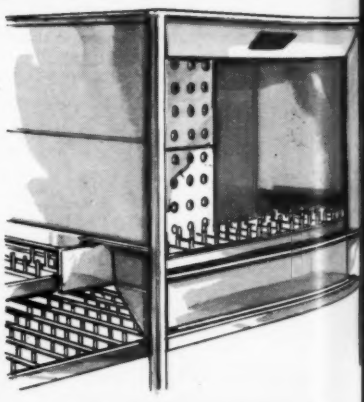
FERROFILTERS



FURNACE TOOLS AND FIXT

PICKLE BASKETS AND HOISTS

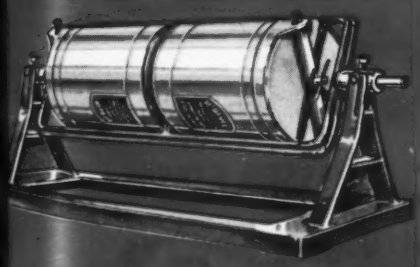
PICKLE TANKS



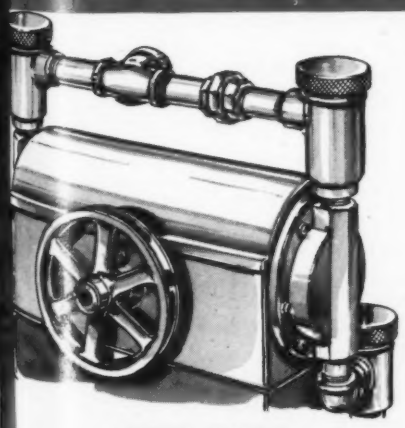
SPRAY BOOTHS

in PORCELAIN ENAMELING SUPPLIES and Chicago Vit can supply it!

ENAMEL PRESSURE TANKS



JAR MILLS AND JAR MILL RACKS



VITRA-PUMP

Agitating Storage Tanks
Aprons, Rubber
Asbestos, Mitts and Supplies
Ball Mills
Balls, Porcelain
Block and Tackle
Booths, Spray
Brick, Mill Lining
Brushes, Bolt Hole
Brushes, Edging
Brushes, Hand
Brushes, Pencil Marking
Brushes, Special
Brushes, Tube
Brushes, Typewriter
Brushes, Wheel
Burning Tools
Cement, Mill Lining
Chemical Glassware
Chemicals
Circulating Dip Tanks
Clay
Clocks
Color Oxides
Combs, Pickling
Crates, Pickling
Dippers
Dolly, Tank
Drying Points
Dusters
Filters, Pickle Tanks
Frantz FerroFilters
Furnaces
Furnace Tools
Gauge, Thickness
Gloves, Rubber
Graduates
Graining Pastes
Gravity Buckets
Grinding Balls
Grinding Wheels
Guns
Hoists
Hose
Interval Timers
Jars, Porcelain
Jars, Steel Jacket
Laboratory Jar Mills
Ladles
Magnetic Separators
Meters, Water
Mill Head Assembly
Mill Lining Brick
Mill Lining Cement
Mill Lining Installation Service
Mills, Jar
Mills, Pebble and Ball
Mitts, Asbestos
Oil and Water Separators
Oxides, Color
Paper, Stencil
Patching Compound
Photovolt Reflection Meter
Pickling Baskets
Pickling Racks
Pickling Tanks
Pit-Driers
Plugging Compound
Porcelain Balls
Porcelain Brick
Pressure Tanks
Quinn-Rogers Vitra Pump
Quick Set Chemical
Rectifiers
Respirators
Ro-tap
Roto-Sprays
Rubber Aprons
Rubber Gloves
Rubbing Stones
Scales
Screening Inks
Separators, Oil and Water
Separators, Magnetic
Shoe Caulks
Sieves, Brass Testing
Sieves, Ro-tap
Spray Booths
Spray Gun Hose
Spray Guns
Standard Solutions
Stencil Paper
Storage Tanks
Tank Dolly
Tanks, Circulating Dip
Tanks, Pickling
Tanks, Pressure
Tanks, Storage
Testing Sieves
Textite Separator
Thermometers
Thickness Gauge
Timers
Titration Equipment
Turntables
Water Meters
Water Treatment
Wire Cloth
Wool Dusters

If you do not have this Catalog send for it today!

Chicago Vitreous CORPORATION

A Division of the Eagle-Picher Company
1425 South 55th Court Cicero 50, Illinois

Serving the Needs of the Industry since 1918

safe transit

editorial voice of the national safe transit program

devoted to improving packaging methods and shipping and materials handling methods for the appliance and metal products manufacturing industries. This section contains plant experience information and industry advances for the use of all executives and plant men interested in improving packaging and shipping methods and in loss prevention. The section contains complete information on the national safe transit pre-shipment testing program for packaged finished products and detailed reports of divisions and sub-committees of the National Safe Transit Committee.

Electric-Powered Fork Truck Described In Bulletin

A four-page bulletin, illustrating and describing a 2000-pound capacity, electric-powered fork truck has been published. The new truck, designated Model F-48T2, is specifically designed for use in low head-room areas . . . during loading and unloading of covered street trucks, in tunnels, in basements, or in areas where overhead pipes, machinery, and like obstructions are a problem.

The free bulletin is highlighted with operating photographs of the truck in action, with views of major truck components, and by detailed engineering drawings. Copies may be obtained by writing Dept. MPM, The Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 3, Ohio.

Special Offer Announced For Packaging Glossary

A special inventory reduction offer for the Packaging Institute's "Glossary of Packaging Terms" has been announced by Harry Vick, Jr., chairman of the institute's Publications committee. The second edition of the glossary, which defines the language of the packaging industry, is now available at $3.00 per copy, and may be obtained from the Packaging Institute office, 342 Madison Ave., New York 17, N.Y.

"STOW" System Described

A three-color, descriptive, four-page brochure describes a new concept of material handling called the "Stow" system. Recently introduced at the Material Handling Engineering Show, the system is said to cut wasted warehouse aisle space 50 per cent by eliminating the 90° turn of the fork truck. The letters in the word "Stow" stand for side transfer-optimum warehousing. For a copy of the brochure, write to Dept. MPM, Equipment Manufacturing, Inc., 21550 Hoover Rd., Detroit, Michigan.

High Speed Lift Truck

This compact, low silhouette, sit-down rider-type electric lift truck has been recently introduced by Yale Materials Handling Div., The Yale & Towne Mfg. Co. It has a lift speed capability of up to 150 feet per minute. Elimination of time delays between speed changes is accomplished by the use of a mechanically-actuated carbon pile with series parallel connections in the drive motors.

Rack Engineering Announces Addition

Rack Engineering Co., Connellsville, Pa., manufacturer of industrial storage and material handling equipment, has announced a $75,000 plant expansion program. According to Samuel Saul, Jr., president of the company, the addition to the present plant will soon be erected.

Overhead Equipment Booklet

A revised illustrated booklet, entitled "Engineering and Application Data," pertains to overhead materials handling equipment. It covers various types of carriers, cranes, tractors and track switches. Detailed studies of track design, peening, and stresses are given. To obtain a free copy of the booklet, write to Dept. MPM, The Cleveland Tramrail Div., The Cleveland Crane & Engineering Co., 1036 E. 289th St., Wickliffe, Ohio.

Flexible Steel Strapping

A flexible steel strapping which conforms to the shape of the package it secures has been developed especially for the metal industry. Said to be particularly useful for odd-shaped and palletized packages, the strapping is .031 cold-rolled steel that has a light weight and handles easily. It is available in ¾" and 1¼" sizes. For further information, contact Dept. MPM, Brainard Steel Strapping Div., Sharon Steel Corp., Warren, Ohio.

Canadian Packaging Show Set For Toronto, Nov. 3-5

Stuart G. Gillespie, Canadian National Packing Exposition chairman, has announced that approximately 87 per cent of available space has already been sold to 122 exhibitors for this year's show to be held Nov. 3-5 in the Automotive Bldg., Exhibition Grounds, Toronto, Canada.

Gillespie predicts an early sellout of the show, which is sponsored by the Packaging Assn. of Canada. In commenting on the show, he said, "Packag-

ing developments are occurring at such an accelerated rate that it is becoming increasingly difficult for company executives and production personnel to keep abreast of these ever-changing trends and developments."

Last year, approximately 14,200 visitors from Canada and the U.S. attended the exposition.

Two NSTC Booklets Available

A new, revised edition of National Safe Transit Committee, Inc.'s official Test Procedures booklet, along with a new publication titled Certified Products Register, has just been released for distribution, according to Ralph F. Bisbee, NSTC, Inc. president. While the basic test procedures remain substantially the same, the Test Procedures booklet reflects certain revisions, such as identification, new requirements for certification, etc.

The new publication, Certified Products Register, is designed to give due recognition to manufacturers whose products meet National Safe Transit Committee pre-shipment requirements on a regular basis.

Single copies of the booklets are available at no charge by writing National Safe Transit Committee, Inc., 1145 Nineteenth St., N. W., Washington, D. C. Additional copies are available at 25 cents each.

Shock Absorber Door

Resilient, urethane-filled bumpers take the shock away from the actual door of the self-closing Clark shock absorber door. In use, fork trucks do not touch the door proper. Flexibly suspended hinges provide uniform distribution of stress throughout the length of the door at either side. The return spring is said to assure tight, accurate closure after each opening.

For more details, write Dept. MPM, Clark Door Co., 515 Hunterdon St., Newark 8, N.J.

Storage Rack Booklet

"Be Your Own Storage Rack Expert" is the title of a well illustrated reference booklet, which shows how ordinary pipe can be used to construct storage racks at one-half the usual cost. Step-by-step details are given for constructing various racks, such as pallet, drum, bar-stock, or general purpose. The only materials said to be required are ordinary pipe plus a simple universal clamp. For a free copy of the booklet, write to Dept. MPM, Tube-Strut Corp., 2960 Marsh St., Los Angeles 39, Calif.

Determining proper battery rate charge by using a simplified chart

THE PROPER CHARGE RATE for a lead-acid, motive power battery being charged by motor-generator equipment can be found by means of a simplified, yet effective chart.

Developed by Exide Industrial Div., The Electric Storage Battery Co., Philadelphia, for use on electric industrial trucks and mine vehicles, the chart applies to batteries of any number or size of cells, in any state of charge, which are being charged on an eight hour basis. It can be used to determine the proper rate with either shunt-wound or compound-wound generator charger equipment.

The following steps are taken when using the chart:

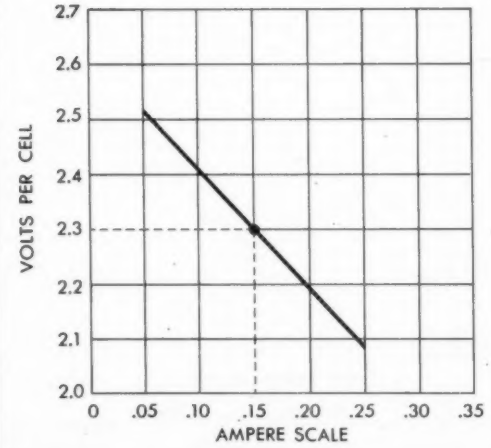
1. Place battery on charge for approximately one hour, or until machine is warm.
2. With battery on charge, use voltmeter to determine voltage at battery terminals.
3. Divide terminal voltage by number of cells.
4. Mark down volts per cell on diagonal line of chart.
5. Read down to corresponding point on ampere scale of chart.
6. Multiply this ampere value by the six hour, ampere hour capacity of the battery, which is found on battery nameplate.
7. The result is the proper rate of charge in amperes at that particular state of charge of the battery.

With shunt-wound equipment (generally used for single-circuit chargers), adjust the generator field rheostat, usually found under the dome of the vertical generator or in the control cabinet, to produce the proper rate of current. With compound-wound equipment (generally multiple-circuit chargers), adjust the heavy series resistor between the generator bus and battery to a value that will produce the proper current. Make sure that the generator is set at the correct voltage for the number of cells of the battery.

For most accurate results, Exide recommends that charger adjustments be checked and readjusted, if necessary, near the midpoint of any charge, not at the beginning or end. This ordinarily happens when cell terminal voltages are between 2.25 and 2.40 volts per cell.

CHART FOR DETERMINING 8-HOUR CHARGE RATE FOR LEAD-ACID MOTIVE POWER BATTERIES

(SHUNT- OR COMPOUND-WOUND GENERATOR EQUIPMENT)

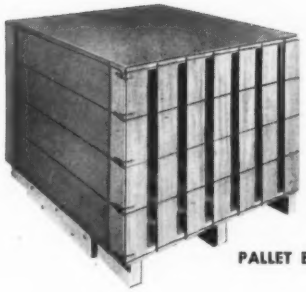


TABLE

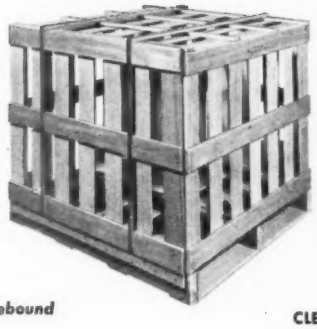
TOTAL COMPOUND-WOUND GENERATOR VOLTAGE FOR CHARGING AT 2.63 VOLTS PER CELL

NO. OF CELLS	TOTAL GENERATOR VOLTAGE
6	15.8
9	23.7
12	31.6
15	39.5
16	42.1
18	47.4

Plotted on the chart is a 16-cell, 720 ampere hour six-hour capacity battery. Voltmeter reads 36.8 volts at terminals. Dividing terminal voltage by 16 cells gives a figure of 2.3 volts per cell. Reading down from diagonal line to amp scale, a figure of .15 is arrived at, and multiplied by 720 (ampere hour six-hour capacity) gives a proper rate charge of 108 amps.



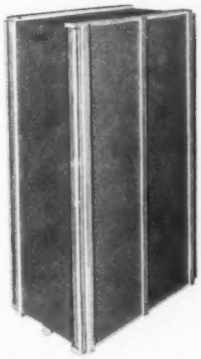
PALLET BOXES — *Wirebound*



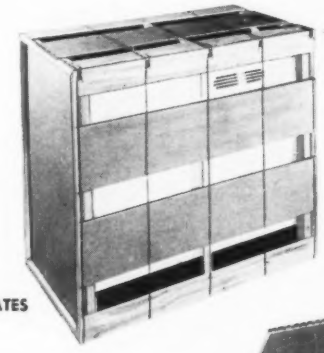
PALLET BOXES — *Hinged Corner*

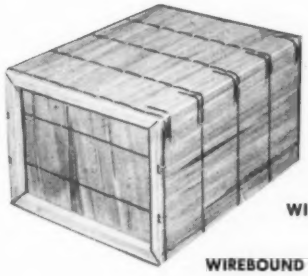
CLEATED BOXES

We make 'em all



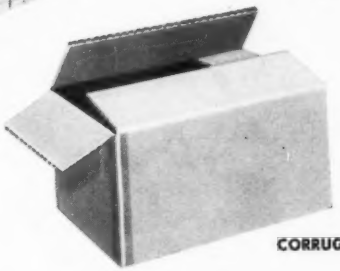
E-Z PAK CLEATED CORRUGATED
(Watkins Type)





WIREBOUND CRATES

WIREBOUND BOXES



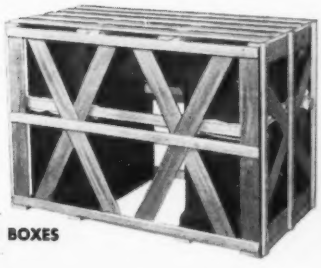
CORRUGATED

you can be sure . . . .

that recommendations from Chicago Mill are based on impartial, unbiased decisions because we manufacture the most diversified line of shipping containers in the country!

Materials used include—

Plywood • Craveneer • Corrugated • Veneer • Resawed



HINGED CORNER CRATES OR BOXES

FREE! *Illustrated catalog showing the various types and applications of Chicago Mill containers, Chicago Mill's services.*

CHICAGO MILL AND LUMBER COMPANY

33 South Clark Street — Chicago 3, Illinois

PLANTS

- CHICAGO, ILLINOIS
- GREENVILLE, MISSISSIPPI
- HELENA, ARKANSAS
- ROCKMART, GEORGIA
- TALLULAH, LOUISIANA

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R. F. KENDIG, York St. at Park Ave., Elmhurst, Ill. ..... TErrace 4-5280
KARL J. SHULL, 608 Midvale, Los Angeles 24, Calif. ..... GRanite 7-8824 and WEbster 1-3030
FRED JAMESON, 821 Edinburgh St., San Mateo, Calif. ..... Diamond 3-8806

CLASSIFIED

Steel Pipe Undergoes X-Ray

A joint weld on a length of 18-inch steel piping undergoes X-ray inspection at the Pittsburgh plant of the Power Piping Div., Blaw-Knox Co. The pipe will be used in a hot reheat line for a utility company steam generating station. X-raying is done to meet customers' specifications. The X-ray machine is a 250 kva General Electric unit.

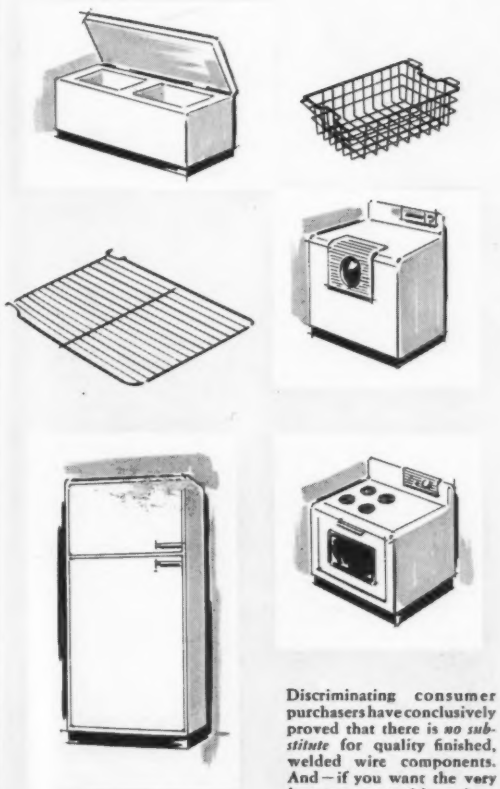
want more leisure time?

..... then here's an easy way to get it

and build sales, too!

Saving your time and manufacturing dollars is more than a habit at Union Steel, it's a tradition! Devising ingenious ways to shorten time between idea and delivery, creation of new designs in welded wire, engineering new methods for more rapid, economical manufacture . . . all are routine benefits you realize when you specify Union Steel, the experienced source that guarantees welded wire components of higher quality.

Need more worry-free leisure time? Simply place your design and fabrication problems in the capable, experienced hands of Union Steel's engineers and skilled craftsmen and rest assured that your new welded wire components will help make your appliance more efficient, desirable and saleable, too!



Discriminating consumer purchasers have conclusively proved that there is *no substitute* for quality finished, welded wire components. And—if you want the very best at a competitive price—just specify USP.

First Name in Welded Wire Products—

UNION STEEL PRODUCTS CO.

Contract Wire Division ALBION, MICHIGAN

Union Steel's complete design and fabrication service is as close as your telephone. A call to NAtional 9-2181 (Albion), a wire or perhaps a brief note will bring immediate action. Why not let USP's engineers prove how easily they can save your time . . . and dollars, today?

USP

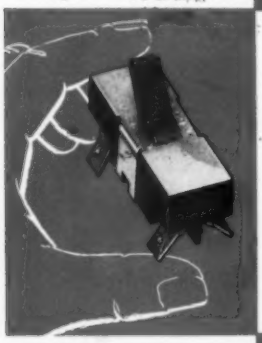
TEP NOW OFFERS BROADER SERVICE AND NEW PRODUCTS

For Appliance and Related Applications

Here is the present line of Tuttle products designed to help you manufacture better electrical products. New in the group are the single position infinite control and the tubular heating element. The Single Position Infinite Control was formerly manufactured and sold by Tuttle & Kift, Inc., and we are pleased to announce our acquisition of the manufacturing and sales rights to this highly efficient control. The Tubular Heating Element was recently designed by us for use in hand dryers. It has many other possible uses. We would welcome the opportunity of working with you on any of your problems involving any one or more of these, or other electrical products. Merely call or write.

1 SINGLE POSITION INFINITE CONTROL

The N-14 Control enables a heating unit to deliver all or any portion of its heating capacity. Proportioning of heating capacity is accomplished by a pre-setting of the control knob, thereby controlling the time of contact dwell. Furnished in various time cycles depending upon your requirements, i.e., from 4 R.P.M. to ½ R.P.M. cycle motors.

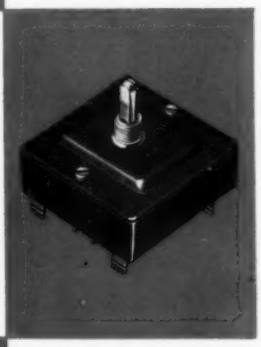


2 TOGGLE SWITCHES

The unusual simplicity of the new TEP Toggle Switch design achieved by Tuttle Research Engineers, now provides a dependable, top-quality switch at lower cost. Considerably smaller than comparative switches offering the same variety of contacts, it includes provisions for four-way wiring connections. There are only 11 working parts, and the complete switch weighs less than one ounce.

3 HEAT SELECTOR SWITCHES

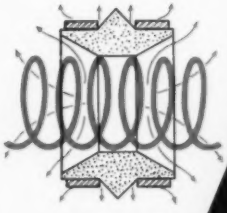
Series 3000 rotary snap-type switches, also manufactured by TEP for electric ranges, air conditioners, space heaters and related applications, feature positive, trouble-free contact action and 7-heat selection. They are available either with or without a pilot light and with different shafts and handles to suit your needs. Write today for sample and quotation.



4 TUBULAR HEATING ELEMENT

This element is ideal for a wide range of applications. It's highly efficient in heat guns, hair dryers, space heaters, hot food vendors, photo print dryers, and other products where air is to be heated while flowing through a tube or nozzle. It can be controlled thermostatically and furnished in ratings from 500 to 2000 watts at 115 or 220 volts.

Cross-sectional view of new TEP insulator and cross-bar design. More space for air circulation assures better heat dissipation, longer wire life.



PATENT PENDING

5 OPEN COIL HEATING ELEMENTS

The design and manufacture of "open coil" heating elements has long been a major TEP service to the appliance industry. TEP has designed and developed many new and exclusive features, such as the one illustrated with diamond shaped insulators. Call or write today for TEP design and engineering assistance on any job. There is no obligation.

WRITE TODAY for complete data and quotations

TEP Products

TUTTLE ELECTRIC PRODUCTS, Inc.

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MANUFACTURERS OF OPEN COIL HEATING ELEMENTS, SWITCHES, CONTROLS